

**Table S4:** Breakdown of the benefits of DNA barcoding sponges. Based on a 100% sequence identity, sponge barcode identifications increased metabarcoding species-level classifications by 37% (15 of 41 total MOTUs). Overall, 75% of the sponge DNA barcodes from this study (30 BMs out of 40) are new to Genbank.

	MOTU	MOTU Classification	GenBank Accession #	GenBank ID	BM (n = 40)	New Sponge Species to GenBank
100% Seq ID Metabarcoding Matches						
	MOTU_49	<i>Chelonaplysilla</i>	KX866758	<i>Chelonaplysilla erecta</i>		
	MOTU_454	Poecilosclerida	KU906059	<i>Clathria prolifera</i>		
	MOTU_1125	Dictyoceratida	KX866767	Lamellodysidea sp. Po.25778		
	MOTU_161	<i>Hymeniacion</i>	MK833925	<i>Halichondria</i> sp. HK-2019	<i>Hymeniacion</i> sp. 1	
	MOTU_354	<i>Haliclona</i>	MT491518	Niphatidae sp. 8 PRT-2020	<i>Haliclona</i> sp. 4	
	MOTU_306	<i>Tedania</i>	DQ133902	<i>Tedania klausii</i>	<i>Tedania</i> cf. <i>klausii</i>	
	MOTU_2	<i>Protosuberites</i>	KX866738	<i>Terpios gelatinosus</i>	<i>Protosuberites</i> sp. 1	
	MOTU_524	<i>Tethya</i>	KX866754	<i>Tethya aurantium</i>	<i>Tethya</i> sp. 3	
	MOTU_506	<i>Tethya</i>	EF584567	<i>Tethya minuta</i>	<i>Tethya</i> sp. 2	
	MOTU_132	<i>Aplysilla</i>			<i>Aplysilla rosea</i>	✓
	MOTU_304	Dendroceratida			Dendroceratida sp. 6	✓
	MOTU_195	<i>Halichondria</i>			<i>Halichondria</i> sp. 1	✓
	MOTU_445	<i>Haliclona</i>			<i>Haliclona</i> sp. 1	✓
	MOTU_722	<i>Haliclona</i>			<i>Haliclona</i> sp. 2	✓
	MOTU_111	<i>Hymeniacion</i>			<i>Hymeniacion</i> sp. 2	✓
	MOTU_591	<i>Lissodendoryx</i>			<i>Lissodendoryx</i> sp. 2	✓
	MOTU_217	<i>Oscarella</i>			<i>Oscarella</i> sp. 3	✓
	MOTU_88	<i>Oscarella</i>			<i>Oscarella</i> sp. 6	✓
	MOTU_213	<i>Plakina</i>			<i>Plakina</i> sp. 1	✓
	MOTU_6	<i>Plakortis</i>			<i>Plakortis</i> sp. 1	✓
	MOTU_45	<i>Protosuberites</i>			<i>Protosuberites</i> sp. 2	✓
	MOTU_223	<i>Terpios</i>			<i>Terpios</i> sp. 1	✓
	MOTU_907	<i>Tethyidae</i>			<i>Tethyidae</i> sp. 1	✓
	MOTU_346	<i>Chondrillida</i>			Verongimorpha	✓
100% Seq ID BM matches						
			MT577592	<i>Stelletta</i> sp. IOS	Ancorinidae sp. 1	
			MT491518	Niphatidae sp. 11	Haplosclerida sp. 7	
			MT491518	Niphatidae sp. 11	Haplosclerida sp. 8	
			MT586740	<i>Cladocroce burapha</i>	<i>Cladocroce</i> sp. 1	
					Ancorinidae sp. 3	✓
					Chalinidae sp. 1	✓
					<i>Chelonaplysilla</i> sp. 1	✓
					<i>Chondrillida</i> sp. 1	✓
					<i>Dysidea</i> sp. 3	✓
					<i>Haliclona</i> sp. 24	✓
					Haplosclerida sp. 1	✓
					Haplosclerida sp. 2	✓
					<i>Ircinia</i> sp. 2	✓
					<i>Oscarella</i> sp. 5	✓
					Poecilosclerida sp. 1	✓
					<i>Protosuberites</i> sp. 3	✓
					<i>Tethya</i> sp. 4	✓
					<i>Tethya</i> sp. 5	✓
					<i>Tethya</i> sp. 6	✓