

Comparison of morphological and DNA metabarcoding analyses of diets in exploited marine fishes

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Figure S1. Similarity matches of COX sequences obtained from individual dietary items to GenBank and BOLD databases. N=48 sequences.

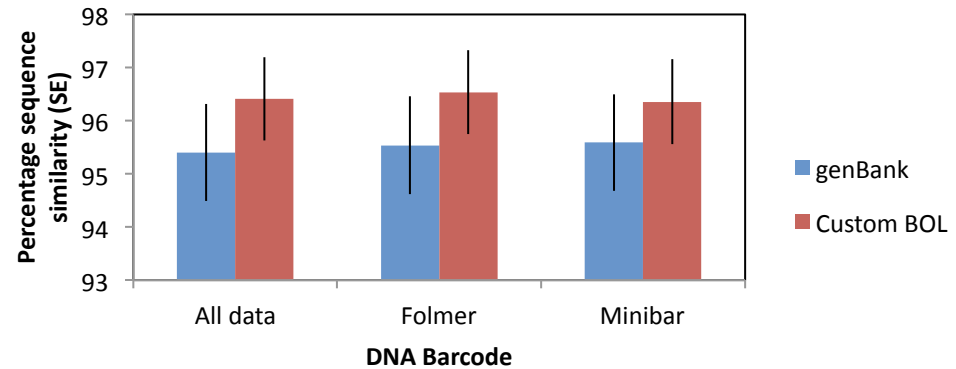


Table S1. List of PCR primers employed in dietary studies of SESSF fishes.

Primer F (5'-3')	Primer R (5'-3')	Target taxa	Reference
HCO2198 TAAACTTCAGGGTGACCAAAAAATCA	LCO1490 GGTCAACAAATCATAAAGATATTGG	Metazoan invertebrates	Folmer <i>et al.</i> 1994
MiniBar-Mod-F TCCACTAATCACAAGAYATYGGYAC	MiniBar-Mod-R AGAAAATCATAATRAANGCRTGNGC	Universal eukaryote	Modified from Meusnier <i>et al.</i> 2008
Chord_16S_F CGAGAAGACCCTRTGGAGCT	Chord_16S_R (modified) GGATWGCCTGTTATCCCT	Chordata/cephalopoda	Deagle <i>et al.</i> 2009
BiSSU1100_F AGAGGTGAAATTSTTGAYCG	BiSSU1300_R CCTTTAAGTTTCAGCTTTGCA	Bilateria	Jarman <i>et al.</i> 2004

Table S2. Assignment of COX1 sequences obtained from single specimens. Identities represent the highest sequence identity in BLAST searches of the GenBank and BOLD databases. Assignments $\geq 98\%$ identity are identified at species level, 96-98% genus, 94-96 family, 92-94 order, 90-92 class. For assignments above species, the taxon providing the highest blast match is indicated in parentheses.

Prey Group	Prey Taxon	Host fish							
		<i>Genypterus blacodes</i>	<i>Helicolenus percoides</i>	<i>Nemadactylus macropterus</i>	<i>Platycephalus richardsoni</i>	<i>Rexea solandri</i>	<i>Seriolaella brama</i>	<i>Trachurus declivis</i>	<i>Zeus faber</i>
Actinopterygii	<i>Apogonops anomalus</i>					1			1
Actinopterygii	<i>Chaunax sp. 1 (BOLD FOAG242-08)</i>		2						
Actinopterygii	<i>Actinoipterygii 1 (Chromis sp.)</i>	1							
Actinopterygii	<i>Perciformes 1 (Cubiceps sp.)</i>					1	1		
Actinopterygii	<i>Emmelichthys nitidus</i>								1
Actinopterygii	<i>Foetorepus apricus</i>								1
Actinopterygii	<i>Foetorepus calauropomus</i>								1
Actinopterygii	<i>Genypterus blacodes</i>	4							
Actinopterygii	<i>Helicolenus sp. 3 (BOLD FOAN775-11)</i>		4						1
Actinopterygii	<i>Lampanyctodes hectoris</i>		1						
Actinopterygii	<i>Lepidorhynchus denticulatus</i>					1			
Actinopterygii	<i>Lepidotrigla mulhalli</i>								1
Actinopterygii	<i>Macruronus novaezelandiae</i>					4			
Actinopterygii	<i>Platycephalus richardsoni</i>				4				
Actinopterygii	<i>Pinguipedidae 1 (Parapercis sp.)</i>							1	
Actinopterygii	<i>Paraulopus nigripinnis</i>								1
Actinopterygii	<i>Sardinops sagax</i>				1				
Actinopterygii	<i>Seriolaella brama</i>						4		
Actinopterygii	<i>Trachurus novaezelandiae</i>		2			1		5	1
Actinopterygii	<i>Zeus faber</i>								1
Crustacea	<i>Ebalia nux (BOLD DAR296-07)</i>		1						
Crustacea	<i>Decapoda 1 (Munida sp.)</i>	1							
	Total sequences	6	10	0	5	8	5	6	9
	Host sequences (%)	4 (80)	4 (40)		4 (80)	0	4 (80)	5 (83)	1 (10)

Table S3. Assignment of 18S Bilateria DNA sequences obtained from the stomach contents of eight predatory fishes to operational taxonomic units (MOTU). Assignments to broad taxonomic group were made by the least common ancestor approach, and further breakdowns to OTUs were made with the clustering algorithm in Qiime. Figures indicate the number of reads assigned. Only instances of 5 or more reads are shown.

Species detected	MOTU	<i>Predator</i>								
		<i>Genypterus</i>	<i>Helicolenus</i>	<i>Nemadactylus</i>	<i>Platycephalus</i>	<i>Rexea</i>	<i>Seriolella</i>	<i>Trachurus</i>	<i>Zeus</i>	
<i>Gnathostomata</i>	MOTU1	12			199		993		130	
	MOTU2					6			572	
	MOTU3					83		14		
<i>Euteleostomi</i>	MOTU1	5						27		
	MOTU2				5					
	MOTU3							64		
<i>Elopocephala</i>	MOTU1	473	1879	2129			7464	472	1392	442
	MOTU2	9	14	8						
	MOTU3		5							
	MOTU4		31							
	MOTU5		15							
	MOTU6			33						
	MOTU7			7						
	MOTU8					7				
	MOTU9					13				
	MOTU10					10				
	MOTU11						16			
	MOTU12								11	
<i>Otocephala</i>	MOTU1				1507					
	MOTU2				375					
	MOTU3				19					
	MOTU4				81					
	MOTU5				7					
<i>Tunicata</i>	MOTU1	5	526							
	MOTU2		5							
	MOTU3		20							

Species detected	MOTU	<i>Predator</i>							
		<i>Genypterus</i>	<i>Helicolenus</i>	<i>Nemadactylus</i>	<i>Platycephalus</i>	<i>Rexea</i>	<i>Seriolella</i>	<i>Trachurus</i>	<i>Zeus</i>
	MOTU4		5						
	MOTU5		11						
<i>Salpidae</i>	MOTU1			15					
<i>Chelicerata</i>	MOTU1			5					
<i>Calanidae</i>	MOTU1			19					
	MOTU2			227					
<i>Calanoida</i>	MOTU1						8	78	
<i>Pleuromamma</i>	MOTU1						23	115	
<i>Eumalacostraca</i>	MOTU1	207	151						
	MOTU2		15						
	MOTU3		8						
<i>Isopoda</i>	MOTU1			41					
	MOTU2			5					
<i>Paratanaoidea</i>	MOTU1			10					
<i>Anilocra spp.</i>	MOTU1			1					
<i>Caridea</i>	MOTU1			15					
	MOTU2			258					
	MOTU3			6					
<i>Peracarida</i>	MOTU1						7		
<i>Pleocyemata</i>	MOTU1		2169	219		56	26		
<i>Myodocopida</i>	MOTU1			28					
<i>Myodocopida</i>	MOTU2			8					
<i>Annelida</i>	MOTU1			12					
<i>Chromadorea</i>	MOTU1	190		1932					
	MOTU2			5					
	MOTU3			15					
	MOTU4			11					
<i>Enoplida</i>	MOTU1			21					
<i>Eucestoda</i>	MOTU1	46							

Species detected	MOTU	<i>Predator</i>							
		<i>Genypterus</i>	<i>Helicolenus</i>	<i>Nemadactylus</i>	<i>Platycephalus</i>	<i>Rexea</i>	<i>Seriolella</i>	<i>Trachurus</i>	<i>Zeus</i>
	MOTU2			24					
	MOTU3						5		
	MOTU4						38		
<i>Digenea</i>	MOTU1	509				15			
<i>Digenea</i>	MOTU2			23					
<i>Digenea</i>	MOTU3				6				
<i>Digenea</i>	MOTU4							18	
<i>Monogenea</i>	MOTU1			5					
<i>Platyhelminthes</i>	MOTU1						5		
<i>Myxosporea</i>	MOTU1			32					
<i>Neocoleoidea</i>	MOTU1				68	489			
<i>Caenogastropoda</i>	MOTU1			76					
<i>Protostomia</i>	MOTU1	296	260						
<i>Protostomia</i>	MOTU2		10						
<i>Protostomia</i>	MOTU3			46			9		
<i>Protostomia</i>	MOTU4			59					
<i>Protostomia</i>	MOTU5						6		
Total Reads		1752	5124	5271	2294	9107	599	1849	1014
Number of taxa		10	16	31	12	7	10	9	2
Number of parasite reads (%)		745 (42.5)	0	2044 (38.8)	6 (0.3)	15(0.2)	48(8.0)	18(1.0)	0

Table S4. Assignment of 16S Chord-ceph A rRNA DNA sequences obtained from the stomach contents of eight predatory fishes to taxa based on lowest common ancestor criteria with MEGAN software. Only assignments $\geq 85\%$ identity are listed. MEGAN assignments to species were accepted if % identity $\geq 98\%$. Designation to family was accepted if % identity $\geq 90\%$.

Prey Group	Prey Taxon	Host fish							
		<i>Genypterus</i>	<i>Helicolenus</i>	<i>Nemadactylus</i>	<i>Platycephalus</i>	<i>Rexea</i>	<i>Seriolella</i>	<i>Trachurus</i>	<i>Zeus</i>
Bivalvia	<i>Gafrarium tumidum</i>		15						
Cephalopoda	<i>Euprymna tasmanica</i>				502				
Cephalopoda	<i>Sepiolidae (family)</i>					479			
Gastropoda	<i>Brocchinia fischeri</i>		12						
Crustacea	<i>Penaeoidea</i>		40						
Echinoderm	<i>Paramaretia multituberculata</i>		572						
Polychaeta	<i>Aurospio spp.</i>						7		
Chondrichthys	<i>Dipturus lemprieri</i>			14					
Chondrichthys	<i>Dipturus sp.</i>		42						
Chondrichthys	<i>Pristiophorus nudipinnis</i>		16						
Chondrichthys	<i>Squaliformes sp.</i>		6						
Actinopterygii	<i>Acropomatidae(family)</i>			48					
Actinopterygii	<i>Anthiinae(family)</i>			69					
Actinopterygii	<i>Argentinidae(family)</i>								783
Actinopterygii	<i>Cepolidae(family)</i>			18					
Actinopterygii	<i>Chaunax sp.</i>		13						
Actinopterygii	<i>Coelorinchus spp.</i>	48							
Actinopterygii	<i>Engraulis sp.</i>				1458				
Actinopterygii	<i>Genypterus sp.</i>	3381	6	7					
Actinopterygii	<i>Gnathophis sp.</i>			32	660				
Actinopterygii	<i>Helicolenus sp.</i>	581	8451	24	393			6	
Actinopterygii	<i>Lampanyctodes hectoris</i>	196	535		8	1306		1840	
Actinopterygii	<i>Lepidotrigla sp.</i>		4	10					
Actinopterygii	<i>Macroramphosus scolopax</i>								109
Actinopterygii	<i>Macrourinae (family)</i>	48	6						
Actinopterygii	<i>Macruronus sp.</i>			7	794	2365			
Actinopterygii	<i>Malakichthys griseus</i>		14						
Actinopterygii	<i>Mauroliticus sp.</i>					12			

Prey Group	Prey Taxon	Host fish							
		<i>Genypterus</i>	<i>Helicolenus</i>	<i>Nemadactylus</i>	<i>Platycephalus</i>	<i>Rexea</i>	<i>Seriolella</i>	<i>Trachurus</i>	<i>Zeus</i>
Actinopterygii	<i>Nemadactylus spp.</i>					5	463		
Actinopterygii	<i>Paradiplogrammus sp.</i>			57					
Actinopterygii	<i>Parapercis allporti</i>			40	873				
Actinopterygii	<i>Parapercis ramsayi</i>			14					
Actinopterygii	<i>Percoidei (sub-order)</i>			236		1881			
Actinopterygii	<i>Phosichthyidae(family)</i>							282	
Actinopterygii	<i>Platycephalus richardsoni</i>								
Actinopterygii	<i>Rexea solandri</i>			573	479	8118		5	
Actinopterygii	<i>Sardinops sp.</i>				1585				
Actinopterygii	<i>Scorpaenoidea (family)</i>			20					
Actinopterygii	<i>Sebastinae (family)</i>		8451						
Actinopterygii	<i>Seriolella brama</i>	33					2028		
Actinopterygii	<i>Sygnathiformes(order)</i>			5					
Actinopterygii	<i>Trachurus novaezelandiae/declivis</i>				1036			2934	44
Actinopterygii	<i>Zeus faber</i>					2805			2165
	<i>Total reads</i>	4287	18168	1174	6752	16971	2498	5067	3101
	<i>Number of taxa</i>	5	14	16	10	7	2	4	3
	<i>% host reads</i>	78.91	46.5	0	0	47.8	81.3	57.9	69.8

Table S5. Assignment of COX1 Minibar DNA sequences obtained from the stomach contents of eight predatory fishes. Assignments to broad taxonomic group were made by the least common ancestor approach, and further breakdowns to OTUs were made with the clustering algorithm in Qiime. Figures indicate the number of reads assigned. Only instances of 5 or more reads are shown.

Group	Taxon	<i>Genypterus blacodes</i>	<i>Helicolenus percoides</i>	<i>Nemadactylus macropterus</i>	<i>Platycephalus richardsoni</i>	<i>Rexea solandri</i>	<i>Seriolella brama</i>	<i>Trachurus declivis</i>	<i>Zeus faber</i>
Algae	<i>Fucales (order)</i>						37		
Algae	<i>Pycnococcaceae MOTU 1 (family)</i>		8	44		6	18		
Cnidaria	<i>Cyanea sp.</i>			9			6		
Chelicerata	<i>Pycnogonida (class)</i>			92					
Insecta	<i>Diptera (order)</i>		11						
Insecta	<i>Hexapoda (sub-phylum)</i>			12					
Amphipod	<i>Amphipoda (order)</i>			94		8			
Barnacle	<i>Sessilia (order)</i>						16		
Crustacea	<i>Carcinoplax meridionalis</i>			19					
Crustacea	<i>Ebalia nux.</i>			6		1			
Crustacea	<i>Eucarida (super-order)</i>		6						
Crustacea	<i>Eumalacostraca (sub-class)</i>		25						
Crustacea	<i>Galattheoidea (super-family)</i>		10						
Crustacea	<i>Paguridae sp.1 (family)</i>		93						
Crustacea	<i>Paguridae sp.2 (family)</i>		6						
Crustacea	<i>Pancrustacea MOTU 1 (sub-phylum)</i>			84					
Crustacea	<i>Pancrustacea MOTU 2 (sub-phylum)</i>							6	
Crustacea	<i>Pleocyemata (sub-order)</i>					6			
Echinoidea	<i>Echinodermata (phylum)</i>			6					
Polychaeta	<i>Polychaeta MOTU 1 (class)</i>			6					
Polychaeta	<i>Polychaeta MOTU 2 (class)</i>				8				
Protostomia	<i>Protostomia</i>			5					
Actinopterygii	<i>Apogonops anomalus</i>		3	13		309			158
Actinopterygii	<i>Coelorinchus maurofasciatus</i>	4							
Actinopterygii	<i>Emilichthys nitidus</i>				72				
Actinopterygii	<i>Engraulis australis</i>				42				
Actinopterygii	<i>Genypterus tigerinus/blacodes</i>	2529							23

Group	Taxon	<i>Genypterus blacodes</i>	<i>Helicolenus percoides</i>	<i>Nemadactylus macropterus</i>	<i>Platycephalus richardsoni</i>	<i>Rexea solandri</i>	<i>Seriolella brama</i>	<i>Trachurus declivis</i>	<i>Zeus faber</i>
Actinopterygii	<i>Gnathophis umbrellabius</i>				221				
Actinopterygii	<i>Helicolenus percoides</i>		1973	15		16			
Actinopterygii	<i>Lampanyctodes hectoris</i>					5		6	
Actinopterygii	<i>Lepidorhynchus denticulatus</i>					5			
Actinopterygii	<i>Macroramphosus scolopax</i>			6					117
Actinopterygii	<i>Macruronus novaezelandiae</i>		51		188	488			
Actinopterygii	<i>Nemadactylus macropterus</i>		6	399		2			
Actinopterygii	<i>Parapercis sp. 5 (BOLD:AAD4667)</i>			6	380				
Actinopterygii	<i>Paraulopus nigripinnis</i>								13
Actinopterygii	<i>Percomorpha sp. 1 (super-order)</i>			8					
Actinopterygii	<i>Platycephalus richardsoni</i>	59			39				
Actinopterygii	<i>Rexea solandri</i>		148	440	35	1157	6		194
Actinopterygii	<i>Sardinops sagax</i>				330				
Actinopterygii	<i>Seriolella brama</i>						561		
Actinopterygii	<i>Trachurus novaezelandiae/declivis</i>		4	302		2		937	63
Actinopterygii	<i>Zeus faber</i>			572					420
Chondrichthys	<i>Dipturus sp.</i>		5						
Chondrichthys	<i>Urolophus sp.</i>				8				
	<i>Total reads</i>	2592	2349	2138	1323	2005	644	949	988
	<i>% host reads</i>	97.6	84.0	18.6	2.9	55.6	87.1	98.7	42.5
	<i>Number of taxa</i>	2	13	19	9	11	5	2	6

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