

# Seagrass structural complexity and landscape configuration as determinants of tropical fish assemblage composition

Martin Gullström<sup>1,\*</sup>, Maria Bodin<sup>2</sup>, Per G. Nilsson<sup>3</sup>, Marcus C. Öhman<sup>1</sup>

<sup>1</sup>Department of Zoology, Stockholm University, 106 91 Stockholm, Sweden

<sup>2</sup>Department of Marine Ecology, Göteborg University, Box 461, 405 30 Göteborg, Sweden

<sup>3</sup>Tjärnö Marine Biological Laboratory, Department of Marine Ecology, Göteborg University, 452 96 Strömstad, Sweden

Email: martin.gullstrom@zoologi.su.se

Marine Ecology Progress Series 363:241–255 (2008)

**Appendix 1.** Density (mean), biomass (mean), and size (mean and range) of all species or other taxonomic level of fish (with appropriate fish families shown in bold) caught during the survey in Chwaka Bay. Locality and size class proportions based on density data are shown for fish identified to species level. Fish are distinguished (based on Froese & Pauly 2005 and this study) into the feeding guild groups H (seagrass/algae herbivores), HA (algae herbivores), IF (invertebrate/fish feeders), I (invertebrate feeders), O (omnivores), or No (no information), and the habitat preference groups G (generalists), M/S (mangrove-seagrass-associated fish), C/S (coral-seagrass-associated fish), S (seagrass residents), and U (fish exclusively associated to unvegetated habitat). See Fig. 1 legend for locality abbreviations

	Feeding guild	Habitat preference	Density (n 1000 m <sup>-2</sup> )	Density proportion				Density proportion			Bio-mass (g 1000 m <sup>-2</sup> )	Size (cm)	
				E	T	M	U	Juve-niles	Sub-adults	Adults		Mean	Range
<b>Acanthuridae (surgeonfishes, tangs, unicornfishes)</b>													
<i>Ctenochaetus striatus</i>	HA	C/S	0.03	1.00					1.00		0.347	11.5	11.5
<b>Antennariidae (frogfishes)</b>													
<i>Antennarius pictus</i>	No	C/S	0.01			1.00			1.00		0.440	10.3	10.3
<b>Apogonidae (cardinalfishes)</b>													
<i>Apogon nigripes</i>	No	S	5.47	0.04		0.96		0.70	0.30		0.015	4.2	2.7–5.6
<i>A. taeniatus</i>	I	G	0.04	1.00					1.00		0.127	8.1	7.5–8.7
<i>Cheilodipterus quinquelineatus</i>	IF	C/S	1.17	0.97		0.03		0.03	0.74	0.23	0.083	8.0	3.5–12.0
<i>Fowleria aurita</i>	I	C/S	0.55	0.49	0.32	0.19		0.61	0.39		0.052	5.8	4.0–7.7
<i>Sphaeramia orbicularis</i>	IF	M/S	0.85		1.00			0.02	0.98		0.174	8.8	6.1–10.2
<b>Aulostomidae (trumpetfishes)</b>													
<i>Aulostomus chinensis</i>	IF	C/S	0.01			1.00			1.00		2.572	51.5	51.5
<b>Balistidae (triggerfishes)</b>													
<i>Rhinecanthus aculeatus</i>	O	C/S	0.01		1.00			1.00			0.223	8.3	8.3
<b>Blenniidae (combtooth blennies)</b>													
<i>Petroscirtes breviceps</i>	O	C/S	0.11	0.33	0.17	0.50		0.13	0.88		0.011	4.3	3.5–5.6
<i>P. mitratus</i>	O	C/S	0.40	0.74	0.09	0.18		0.03	0.80	0.17	0.019	4.7	2.8–6.8
<b>Bothidae (lefteye flounders)</b>													
<i>Arnoglossus capensis</i>	No	U	0.05				1.00		1.00		0.151	8.9	6.9–13.1
<b>Centriscidae (snipefishes, shrimpfishes)</b>													
<i>Aeoliscus punctulatus</i>	I	C/S	1.21			1.00		0.01	0.99		0.038	12.6	9.1–14.4
<b>Chaetodontidae (butterflyfishes)</b>													
<i>Chaetodon auriga</i>	O	G	0.03	1.00					1.00		0.422	10.3	10.3
<i>C. melannotus</i>	O	C/S	0.01			1.00			1.00		0.118	6.9	6.9
<i>C. xanthocephalus</i>	O	C/S	0.03	1.00					1.00		0.265	9.0	7.9–10.0
<b>Cynoglossidae (tonguefishes)</b>													
<i>Cynoglossus lachneri</i>	I	U	0.01				1.00		1.00		0.873	23.1	23.1
<b>Dasyatidae (stingrays)</b>													
<i>Dasyatis kuhlii</i>	IF	G	0.01			1.00			1.00		3.671	38.7	38.7
<b>Engraulidae (anchovies)</b>													
Engraulidae spp.			0.01	1.00							0.004	3.9	3.9

	Feeding guild	Habitat preference	Density (n 1000 m <sup>-2</sup> )	Density proportion				Density proportion			Bio-mass (g 1000 m <sup>-2</sup> )	Size (cm)	
				E	T	M	U	Juve-niles	Sub-adults	Adults		Mean	Range
<b>Gerreidae (mojarras)</b>													
<i>Gerres oyena</i>	I	M/S	0.20		1.00			1.00			0.045	6.2	2.5–8.8
<b>Gobiidae (gobies)</b>													
<i>Gnatholepis</i> sp. 1			0.17		1.00						0.013	4.2	3.1–6.4
Gobiidae spp.			0.05		0.50	0.50			1.00		0.012	3.9	3.3–4.2
<b>Haemulidae (grunts)</b>													
<i>Plectorhinchus gaterinus</i>	IF	C/S	0.01			1.00		1.00			1.098	16.4	16.4
<b>Holocentridae (squirrelfishes, soldierfishes)</b>													
<i>Neoniphon sammara</i>	O	G	0.07	1.00				0.40	0.60		0.223	10.3	9.0–11.6
<b>Labridae (wrasses)</b>													
<i>Cheilinus bimaculatus</i>	I	C/S	0.01			1.00			1.00		0.126	9.6	9.6
<i>C. oxycephalus</i>	No	G	0.11	0.88	0.13			0.13	0.88		0.057	6.0	5.1–7.0
<i>C. trilobatus</i>	IF	C/S	0.16	0.27	0.05	0.68		0.83	0.17		0.562	11.0	6.7–21.3
<i>C. undulatus</i>	IF	C/S	0.04	0.67	0.33			1.00			0.114	7.7	7.0–8.4
<i>Cheilinus</i> sp.			1.52	0.02		0.98		1.00			0.028	4.9	3.2–9.7
<i>Cheilio inermis</i>	IF	C/S	5.79	0.49	0.02	0.49		0.99	0.01		0.066	10.1	5.3–23.5
<i>Coris caudimacula</i>	I	C/S	0.01			1.00			1.00		0.068	8.1	8.1
<i>Halichoeres nigrescens</i>	No	S	0.01	1.00					1.00		0.088	8.2	8.2
<i>H. scapularis</i>	I	S	0.03			1.00		0.50	0.50		0.040	5.6	4.3–6.9
<i>Hemigymmus fasciatus</i>	I	C/S	0.01	1.00				1.00	0.00		0.008	3.0	3.0
Labridae spp.			0.08	0.06		0.94					0.055	5.6	3.6–8.4
<i>Labroides dimidiatus</i>	IF	C/S	0.04	0.14		0.86			1.00		0.045	6.8	6.4–7.6
<i>Novaculichthys macrolepidotus</i>	I	M/S	0.38	0.01		0.99		0.11	0.82	0.07	0.052	6.8	4.5–13.7
<i>Oxycheilinus digramma</i>	IF	C/S	0.01			1.00		1.00			0.075	8.1	8.1
<i>Stethojulis albovittata</i>	I	C/S	0.97	0.28	0.02	0.69		0.44	0.56		0.021	4.7	2.7–6.8
<i>S. strigiventer</i>	I	G	0.20	0.48	0.10	0.43		0.47	0.53		0.034	5.4	3.0–7.5
<i>Thalassoma</i> sp.			0.03	1.00							0.087	7.4	7.2–7.5
<b>Lethrinidae (emperors or scavengers)</b>													
<i>Lethrinus lentjan</i>	IF	G	0.31	0.28	0.41	0.31		1.00			0.097	6.0	2.7–12.5
<i>L. variegatus</i>	IF	S	0.04			1.00		1.00			0.022	5.0	4.6–5.5
<b>Lutjanidae (snappers)</b>													
<i>Lutjanus fulviflamma</i>	IF	G	0.26	0.37	0.63			0.58	0.42		0.334	11.4	9.0–13.8
<b>Mullidae (goatfishes)</b>													
<i>Parupeneus barberinus</i>	I	C/S	0.26	0.02		0.98		1.00			0.052	6.8	5.3–12.6
<b>Muraenidae (moray eels)</b>													
<i>Echidna nebulosa</i>	IF	C/S	0.08	0.25	0.38	0.38		0.83	0.17		0.305	23.3	16.9–35.9
<i>Gymnothorax</i> sp.			0.01			1.00					0.012	7.9	7.9
<b>Ostraciidae (boxfishes)</b>													
<i>Lactoria cornuta</i>	I	S	0.07	1.00					1.00		2.139	24.6	22.2–26.0
<i>Ostracion cubicus</i>	O	C/S	0.01	1.00				1.00			0.241	7.7	7.7
<b>Plotosidae (eeltail catfishes)</b>													
<i>Plotosus lineatus</i>	O	G	34.64	0.56		0.44		0.97	0.03	0.001	0.067	7.2	1.7–28.4
<b>Pomacentridae (damselfishes)</b>													
<i>Abudefduf sexfasciatus</i>	O	C/S	0.03	0.25		0.75		0.50	0.50		0.071	5.6	2.6–8.5
<i>Chrysiptera annulata</i>	O	S	1.91	0.27		0.73			0.05	0.95	0.084	6.1	3.3–7.0

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<i>Dascyllus aruanus</i>	O	C/S	1.25	0.97	0.03			0.01	0.69	0.30	0.067	6.1	3.1–8.7	
<i>D. trimaculatus</i>	O	C/S	0.03	1.00					1.00		0.059	5.2	4.4–6.0	
<i>Pomacentrus trichourus</i>	O	C/S	0.04		1.00				0.67	0.33	0.110	7.3	6.7–8.0	
<i>P. trilineatus</i>	O	C/S	0.47	0.86	0.05	0.08			0.14	0.86	0.135	7.9	5.4–9.5	
<i>Stegastes nigricans</i>	O	C/S	0.13	0.20	0.80				0.30	0.70	0.617	11.5	7.9–14.5	
<b>Scaridae (parrotfishes)</b>														
<i>Calotomus spinidens</i>	H	S	1.09	0.17	0.02	0.81			0.96	0.04	0.055	5.3	2.7–11.5	
<i>Hipposcarus harid</i>	HA	C/S	2.66	1.00					1.00		0.181	8.7	3.2–17.6	
<i>Leptoscarus vaigiensis</i>	H	S	18.43	0.59	0.21	0.18	0.01		0.95	0.05	0.099	6.8	2.2–20.1	
Scaridae spp.			0.01	1.00					1.00		0.005	2.9	2.9	
<i>Scarus ghobban</i>	HA	G	0.15	0.91	0.09				1.00		0.400	11.2	7.9–14.5	
<i>S. psittacus</i>	HA	C/S	2.19	0.86	0.11	0.04			1.00		0.048	5.7	2.9–8.3	
<b>Scorpaenidae (scorpionfishes or rockfishes)</b>														
<i>Dendrochirus brachypterus</i>	I	C/S	0.01			1.00				1.00	0.124	7.7	7.7	
<i>Scorpaena scrofa</i>	IF	C/S	0.13	0.08	0.04	0.88			1.00		0.302	9.5	5.9–12.0	
<b>Serranidae (sea basses: groupers, fairy basslets)</b>														
<i>Epinephelus caeruleopunctatus</i>	IF	G	0.01		1.00				1.00		0.775	15.6	15.6	
<i>Grammistes sexlineatus</i>	IF	C/S	0.01			1.00				1.00	0.333	10.2	10.2	
<b>Siganidae (rabbitfishes)</b>														
<i>Siganus stellatus</i>	O	C/S	0.04	1.00					0.33	0.67	0.489	10.4	2.5–14.5	
<i>S. sutor</i>	H	C/S	2.38	0.37	0.29	0.34			0.95	0.05	0.122	6.1	1.9–20.4	
<b>Soleidae (soles)</b>														
<i>Pardachirus marmoratus</i>	I	U	0.11				1.00			0.38	0.63	1.588	18.7	13.0–23.7
<b>Sphyrinae (barracudas)</b>														
<i>Sphyrina sp.</i>			0.07		0.33	0.67					0.025	7.4	6.7–8.5	
<b>Synanceiidae (stonefishes)</b>														
<i>Synanceia verrucosa</i>	IF	C/S	0.01	1.00						1.00	8.602	24.5	24.5	
<b>Syngnathidae (pipefishes, seahorses)</b>														
<i>Hippichthys spicifer</i>	No	M/S	0.35	0.20		0.80				0.12	0.88	0.028	14.0	7.1–16.5
<i>Syngnathoides biaculeatus</i>	IF	S	0.98	0.70		0.30				0.42	0.58	0.110	19.6	13.4–22.1
<b>Synodontidae (lizardfishes)</b>														
<i>Saurida gracilis</i>	IF	G	0.01	1.00						1.00	0.293	13.5	13.5	
<b>Terapontidae (grunters or tigerperches)</b>														
<i>Pelates quadrilineatus</i>	IF	M/S	0.27	0.70	0.30				0.40	0.60	0.188	9.2	2.9–12.6	
<b>Tetraodontidae (puffers)</b>														
<i>Arothron hispidus</i>	I	G	0.08		1.00				1.00		0.901	12.4	10.3–15.1	
<i>Canthigaster solandri</i>	O	C/S	1.06	0.35		0.65			0.03	0.96	0.086	6.1	3.0–7.9	
<i>C. valentini</i>	O	C/S	3.19	0.12		0.88			0.23	0.74	0.038	4.5	1.4–8.7	