

The following supplement accompanies the article

# Eastern Pacific reef fish responses to coral recovery following El Niño disturbances

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*Marine Ecology Progress Series 495:233–247 (2014)*

## Supplement. Field sampling schedule and fish species trophic group assignments

**Table S1.** Summary of coral and fish sampling records, Uva Island, Panama

Methods	Year	Months	Seasons	No. samples <sup>b</sup>
Fish transects (FT) <sup>a</sup>	1980	1 (Jan)	D (dry)	3
FT	1981	8, 9, 11	W (wet)	9
FT	1983	4, 10	W	4
FT	1984	7	W	3
Chain transects (CT) <sup>a</sup>	1984	7	W	10
Large quadrat (LQ) <sup>a</sup>	1984	6-9, 11, 12	W	6
FT	1985	1, 8	D, W	6
CT		1, 8	D, W	20
LQ		1, 3, 5, 7, 8, 10	D, W	6
FT	1986	1, 5, 8	D, W	9
CT		1	D	10
LQ		7	W	1
FT	1987	5, 10	W	18
CT		5	W	10
LQ		5	W	1
FT	1988	6, 7	W	9
CT		6	W	10
LQ		6	W	1
FT	1989	2, 10	D, W	18
CT		10	W	10
LQ		2, 10	D, W	2
FT	1990	3	D	9
CT		12	W	10
LQ		3, 12	D, W	2
CT	1992	2	D	10
LQ		2	D	2

CT	1993	3	D	10
LQ		3	D	1
FT	1994	1, 2	D	9
CT		2	D	10
LQ		1	D	1
Small quadrat (SQ) <sup>a</sup>		2	D	5
FT	1995	7	W	9
CT		7	W	10
LQ		7	W	1
SQ		7	W	11
FT	1997	1, 10	D, W	18
CT		1, 10	D, W	20
LQ		1	D	1
SQ		1, 10	D, W	22
FT	1998	3	D	9
CT		3	D	10
SQ		3	D	11
FT	2000	5	W	9
CT		5	W	10
LQ		5	W	1
SQ		5	W	11
FT	2001	2	D	9
LQ		2	D	1
SQ		2	D	11
FT	2002	3	D	9
CT		3	D	10
LQ		3	D	1
SQ		3	D	11
FT	2003	3, 9	D, W	21
CT		3	D	10
LQ		3	D	1
SQ		3	D	11
FT	2004	3	D	9
CT		3	D	10
LQ		3	D	1
FT	2005	3	D	9
CT		3	D	10
LQ		3	D	1
SQ		3	D	11
FT	2006	3	D	9
LQ		3	D	1
SQ		3	D	11
FT	2007	7, 8	W	6
CT		8	W	10
LQ		7	W	1
SQ		7	W	11
FT	2010	3	D	9
CT		3	D	10
LQ		3	D	1
SQ		3	D	11

<sup>a</sup> Sampling areas: Fish Transects, 20x40m; Chain Transects 10m-long chain; LQ, 4x5m plot; SQ, 1m<sup>2</sup>

<sup>b</sup> Total number of surveys over 30-year period: FT = 241; CT = 230; LQ = 34; SQ = 137

**Table S2.** Listing of fish taxa observed during reef fish surveys, 1980-2010. Acronyms refer to the following trophic groups: Benthic Invertivores (BIN), Facultative Corallivores (FAC), Herbivores (HRB), Mixed Diet Feeders (MDF), Piscivores (PIS), Planktivores (PLK). Superscripts indicate literature sources for trophic assignment

Species	Family	Number	%Occurrence	Mean Density	Trophic Group
<i>Lutjanus viridis</i>	Lutjanidae	2265	17.0	10.1	MDF <sup>1,2</sup>
<i>Sufflamen verres</i>	Balistidae	1497	98.7	6.7	BIN <sup>1,2,8</sup>
<i>Arothron meleagris</i>	Tetraodontidae	743	87.5	3.3	FAC <sup>2,4,6,8,9</sup>
<i>Holacanthus passer</i>	Pomacanthidae	667	80.4	3.0	MDF <sup>1,2,8</sup>
<i>Scarus rubroviolaceus</i>	Scaridae	567	79.5	2.5	HRB <sup>1,2,5</sup>
<i>Lutjanus argentiventris</i>	Lutjanidae	544	36.2	2.4	MDF <sup>1,7,8</sup>
<i>Scarus ghobban</i>	Scaridae	370	49.1	1.7	HRB <sup>1,2,3</sup>
<i>Paranthias colonus</i>	Serranidae	210	13.4	0.9	PLK <sup>1,2,3,8</sup>
<i>Acanthurus xanthopterus</i>	Acanthuridae	195	26.8	0.9	HRB <sup>1,2,3,6</sup>
<i>Johnrandallia nigrirostris</i>	Chaetodontidae	152	34.8	0.7	FAC <sup>2</sup>
<i>Fistularia commersonni</i>	Fistulariidae	149	20.5	0.7	PIS <sup>1,2,8</sup>
<i>Lutjanus guttatus</i>	Lutjanidae	136	7.1	0.6	MDF <sup>1</sup>
<i>Caranx caballus</i>	Carangidae	123	1.3	0.5	PIS <sup>3</sup>
<i>Novaculichthys taeniourus</i>	Labridae	121	31.3	0.5	BIN <sup>1,6</sup>
<i>Arothron hispidus</i>	Tetraodontidae	103	33.0	0.5	BIN <sup>1,2,6</sup>
<i>Cephalopholis panamensis</i>	Serranidae	83	25.9	0.4	MDF <sup>1,8</sup>
<i>Mulloidichthys dentatus</i>	Mullidae	66	2.7	0.3	BIN <sup>1,8</sup>
<i>Thalassoma grammaticum</i>	Labridae	66	18.3	0.3	BIN <sup>1</sup>
<i>Chaetodon humeralis</i>	Chaetodontidae	59	12.1	0.3	MDF <sup>1</sup>
<i>Tylosurus crocodilus fodiator</i>	Belonidae	50	4.9	0.2	PIS <sup>1,2</sup>
<i>Haemulon steindachneri</i>	Haemulidae	47	1.8	0.2	MDF <sup>1,3</sup>
<i>Pseudobalistes naufragium</i>	Balistidae	41	12.5	0.2	BIN <sup>1,2</sup>
<i>Lutjanus</i> sp.	Lutjanidae	38	4.0	0.2	MDF <sup>1,2,6</sup>
<i>Acanthurus nigricans</i>	Acanthuridae	36	12.5	0.2	HRB <sup>1,2,3</sup>
<i>Euleptorhamphus viridis</i>	Hemiramphidae	35	2.7	0.2	PLK <sup>1</sup>
<i>Zanclus cornutus</i>	Zanclidae	32	8.5	0.1	FAC <sup>2</sup>
<i>Bodianus diplotaenia</i>	Labridae	29	10.7	0.1	BIN <sup>1,2,3,8</sup>
<i>Seriola rivoliana</i>	Carangidae	27	5.4	0.1	PIS <sup>1,2</sup>
<i>Scarus perrico</i>	Scaridae	23	7.1	0.1	HRB <sup>1,2,8</sup>
<i>Diodon holocanthus</i>	Diodontidae	21	8.0	0.1	BIN <sup>1,2,5</sup>
<i>Ctenochaetus marginatus</i>	Acanthuridae	20	4.0	0.1	HRB <sup>2</sup>
<i>Carangidae</i> sp.	Carangidae	17	2.7	0.1	MDF <sup>2</sup>
<i>Pomacanthus zonipectus</i>	Pomacanthidae	14	5.8	0.1	BIN <sup>1,8</sup>
<i>Halichoeres nicholsi</i>	Labridae	13	5.8	0.1	BIN <sup>1,2,8</sup>
<i>Belonidae</i> sp.	Belonidae	11	0.9	<0.1	PIS <sup>1</sup>
<i>Haemulon maculicauda</i>	Haemulidae	11	0.4	<0.1	BIN <sup>1</sup>
<i>Scarus compressus</i>	Scaridae	10	1.3	<0.1	HRB <sup>1</sup>
<i>Platybelone argalus</i>	Belonidae	9	0.9	<0.1	MDF <sup>1</sup>
<i>Caranx melampygus</i>	Carangidae	8	2.2	<0.1	PIS <sup>2,6</sup>
<i>Gnathanodon speciosus</i>	Carangidae	8	1.3	<0.1	BIN <sup>1,2</sup>
<i>Acanthurus triostegus</i>	Acanthuridae	7	1.3	<0.1	HRB <sup>1,2,3,6</sup>
<i>Epinephelus labriformis</i>	Serranidae	7	3.1	<0.1	MDF <sup>1,2,7,8</sup>

<i>Myripristis leiognathus</i>	Holocentridae	7	1.3	<0.1	PLK <sup>1,7</sup>
<i>Diodon hystrix</i>	Diodontidae	6	2.2	<0.1	BIN <sup>1,2,5,6</sup>
<i>Tylosurus</i> sp.	Belonidae	6	0.4	<0.1	PIS <sup>2</sup>
<i>Dermatolepis dermatolepis</i>	Serranidae	5	1.8	<0.1	BIN <sup>1</sup>
<i>Kyphosus analogus</i>	Kyphosidae	5	1.3	<0.1	MDF <sup>1,8</sup>
<i>Aluterus scriptus</i>	Monacanthidae	2	0.4	<0.1	MDF <sup>1</sup>
<i>Aulostomus chinensis</i>	Aulostomidae	2	0.4	<0.1	MDF <sup>1,5</sup>
<i>Elagatis bipinnulata</i>	Carangidae	2	0.9	<0.1	MDF <sup>1,6</sup>
<i>Halichoeres chierchiae</i>	Labridae	2	0.9	<0.1	BIN <sup>1,8</sup>
<i>Ostracion meleagris</i>	Ostraciidae	2	0.9	<0.1	BIN <sup>1,5,8</sup>
<i>Balistes polylepis</i>	Balistidae	1	0.4	<0.1	BIN <sup>1,2,7,8</sup>
<i>Dasyatis longus</i>	Dasyatidae	1	0.4	<0.1	BIN <sup>1</sup>
<i>Gymnothorax castaneus</i>	Muraenidae	1	0.4	<0.1	MDF <sup>1,8</sup>
<i>Gymnothorax undulatus</i>	Muraenidae	1	0.4	<0.1	MDF <sup>1</sup>
<i>Halichoeres semicinctus</i>	Labridae	1	0.4	<0.1	BIN <sup>1,8</sup>
<i>Kyphosus elegans</i>	Kyphosidae	1	0.4	<0.1	MDF <sup>1,2</sup>
<i>Lutjanus novemfasciatus</i>	Lutjanidae	1	0.4	<0.1	MDF <sup>1,8</sup>
<i>Scarus</i> sp.	Scaridae	1	0.4	<0.1	HRB <sup>2</sup>
<i>Scorpaena mystes</i>	Scorpaenidae	1	0.4	<0.1	MDF <sup>1,8</sup>
<i>Sectator ocyurus</i>	Kyphosidae	1	0.4	<0.1	PLK <sup>1</sup>
<i>Urobatis halleri</i>	Urotrygonidae	1	0.4	<0.1	BIN <sup>1</sup>

Literature sources: 1, Robertson and Allen (2008); 2, Glynn per. obs.; 3, Dominici-Arosemana and Wolff (2006); 4, Guzman and Robertson (1989); 5, Hobson (1974); 6, Hiatt and Strasburg (1960); 7, Hobson (1965); 8, Thomson et al. (2000); 9, Guzmán and López (1991).

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