

The following supplement accompanies the article

Tidal, diel and seasonal effects on intertidal mangrove fish in a high-rainfall area of the Tropical Eastern Pacific

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Supplement. Environmental characteristics of the mangrove ecosystem examined in the Colombian Pacific (Fig. S1), sampling dates (Table S1), approx. inundated creek areas at neap and spring tide (Table S2), effect of repeated creek sampling (Fig. S2), common names of fish species in Table 1 (Table S3), and the precipitation regime in the study site (Fig. S3)



Fig. S1. (a) Mouth of intertidal mangrove creek M1 at low water in the Estero Luisico, Bahía Málaga, Colombian Pacific (see Fig. 1); (b) inner part of creek at low water (height of above-ground stilt root system, 5 to 6 m). Note the low level of elevation of the mangrove floor compared to the mudflat. Also note the high density of Bromeliaceae, indicating high-rainfall conditions

Table S1. Summary of intertidal fish sampling scheme in the 4 creeks from December 2009 to November 2010. N = number of block net samples. May to December, 'very wet'; January to April, 'wet'

No	Month	Date	Tidal magnitude	Mean tidal range (m)	N
1	Dec	18-20	Spring	3.31	6
2	Jan	24-25	Neap	2.36	8
3	Feb	28-2(Mar)	Spring	4.62	6
4	Mar	26-28	Neap	3.10	8
5	Apr	23-24	Neap	2.77	8
6	May	25-27	Spring	3.51	8
7	Jun	6-8	Neap	2.14	8
8	Jul	13-15	Spring	4.38	8
9	Aug	19-21	Neap	2.25	8
10	Sep	25-27	Spring	3.49	8
11	Oct	9-11	Spring	4.61	8
12	Nov	28-29	Neap	3.13	8

Table S2. Mean (\bar{X}) inundation area and volume of the 4 creeks (M1, M2, L1, L2) during spring and neap tides

Creek	Spring tide		Neap tide	
	\bar{X} Area (m ²)	\bar{X} Volume (m ³)	\bar{X} Area (m ²)	\bar{X} Volume (m ³)
M1	5573.6	3282.4	3344.2	1969.4
M2	9392.8	5481.1	5635.7	3288.7
L1	5139.7	4123.7	3083.8	2474.2
L2	4874.5	3647.6	2924.7	2188.6

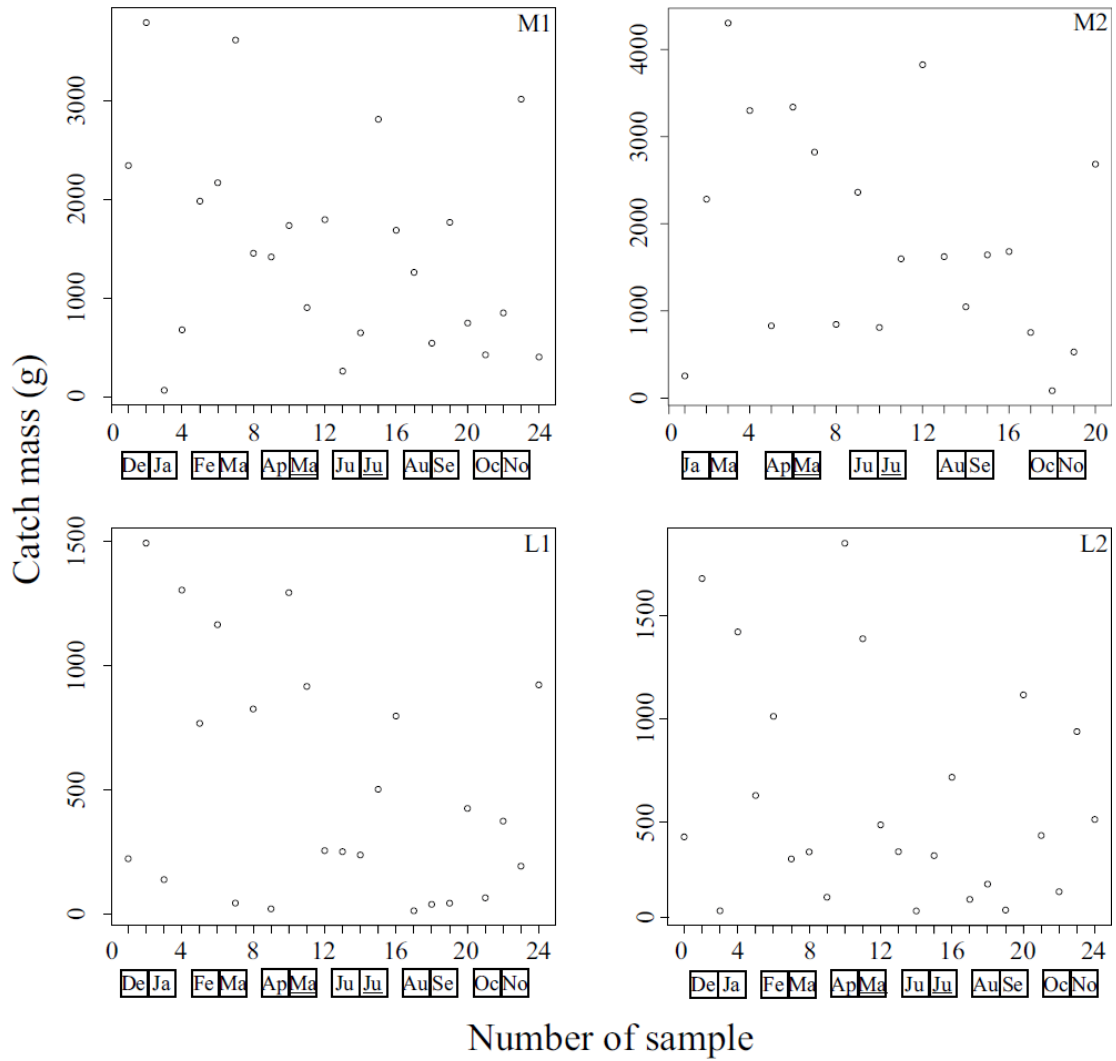


Fig. S2. Correlation plots of catch masses for consecutive block net samplings at the four creeks (M1, M2, L1, L2). De: December, Ja: January, Fe: February, Ma: March, Ap: April, Ma: May, Ju: June, Ju: July, Au: August, Se: September, Oc: October, No: November. Kendall (τ) correlations in all cases were not significant (creek M1: $T = 104$, $p = 0.09679$, $\tau = -0.2463$, creek M2: $T = 75$, $p = 0.2086$, $\tau = -0.2105$, creek L1: $T = 110$, $p = 0.1743$, $\tau = -0.2028$; creek L2: $T = 120$, $p = 0.3893$, $\tau = -0.1204$).

Table S3. Common names for fish species collected in the 4 sampled creeks of Bahía Málaga. Sorted by decreasing abundance

Scientific name	Common name
<i>Lile stolifera</i> (Clupeidae)	Pacific piquitinga
<i>Centropomus armatus</i> (Centropomidae)	Armed snook
<i>Lutjanus argentiventris</i> (Lutjanidae)	Yellow snapper
<i>Diapterus peruvianus</i> (Gerreidae)	Peruvian mojarra
<i>Ariopsis seemanni</i> (Ariidae)	Tete sea catfish
<i>Sphoeroides rosenblatti</i> (Tetraodontidae)	Oval puffer
<i>Centropomus medius</i> (Centropomidae)	Blackfin snook
<i>Poeciliopsis turubarensis</i> (Poeciliidae)	Barred livebearer
<i>Caranx caninus</i> (Carangidae)	Pacific crevalle jack
<i>Oligoplites altus</i> (Carangidae)	Longjaw leatherjacket
<i>Caranx sexfasciatus</i> (Carangidae)	Bigeye trevally
<i>Gobiomorus maculatus</i> (Eleotridae)	Pacific sleeper
<i>Lutjanus jordani</i> (Lutjanidae)	Jordan's snapper
<i>Strongylura scapularis</i> (Belonidae)	Shoulderspot needlefish
<i>Lutjanus guttatus</i> (Lutjanidae)	Spotted rose snapper
<i>Bathygobius andrei</i> (Gobiidae)	Estuarine frillfin
<i>Citharichthys gilberti</i> (Paralichthyidae)	Bigmouth sanddab
<i>Atherinella serrivomer</i> (Atherinopsidae)	Bright silverside
<i>Brycon meeki</i> (Characidae)	–
<i>Opisthonema medirastre</i> (Clupeidae)	Middling thread herring
<i>Daector dowi</i> (Batrachoididae)	Dow's toadfish
<i>Bairdiella ensifera</i> (Sciaenidae)	Swordspine croaker
<i>Eucinostomus currani</i> (Gerreidae)	Pacific flagfin mojarra
<i>Mugil cephalus</i> (Mugilidae)	Flathead grey mullet
<i>Pomadasy macracanthus</i> (Haemulidae)	Longspine grunt
<i>Lutjanus colorado</i> (Lutjanidae)	Colorado snapper
<i>Centropomus unionensis</i> (Centropomidae)	Union snook
<i>Chloroscombrus orqueta</i> (Carangidae)	Pacific bumper
<i>Halichoeres aestuaricola</i> (Labridae)	Mangrove wrasse
<i>Lutjanus novemfasciatus</i> (Lutjanidae)	Pacific dog snapper
<i>Rypticus nigripinnis</i> (Serranidae)	Blackfin soapfish
<i>Cathorops steindachneri</i> (Ariidae)	Steindachner's sea catfish
<i>Eleotris picta</i> (Eleotridae)	Spotted sleeper
<i>Hyporhamphus snyderi</i> (Hemiramphidae)	Skipper halfbeak
<i>Eugerres brevimanus</i> (Gerreidae)	Short fin mojarra
<i>Selene brevoortii</i> (Carangidae)	Hairfin lookdown
<i>Achirus mazatlanus</i> (Achiridae)	Mazatlan sole
<i>Epinephelus quinquefasciatus</i> (Serranidae)	Pacific goliath grouper
<i>Synodus scituliceps</i> (Synodontidae)	Shorthead lizardfish
<i>Cynoscion phoxocephalus</i> (Sciaenidae)	Cachema weakfish
<i>Lophogobius</i> sp. (Gobiidae)	Crested-goby
<i>Ophidion fulvum</i> (Ophidiidae)	Earspot cusk eel
<i>Anchoa exigua</i> (Engraulidae)	Slender anchovy
<i>Anchoa</i> sp. (Engraulidae)	–
<i>Anchoa spinifer</i> (Engraulidae)	Spicule anchovy
<i>Batrachoides pacifici</i> (Batrachoididae)	Pacific toadfish
<i>Ctenogobius sagittula</i> (Gobiidae)	Longtail goby
<i>Guavina micropus</i> (Eleotridae)	Pacific Guavina
<i>Lutjanus aratus</i> (Lutjanidae)	Mullet snapper
<i>Pisodonophis daspilotus</i> (Ophichthidae)	Marble-toothed snake-eel

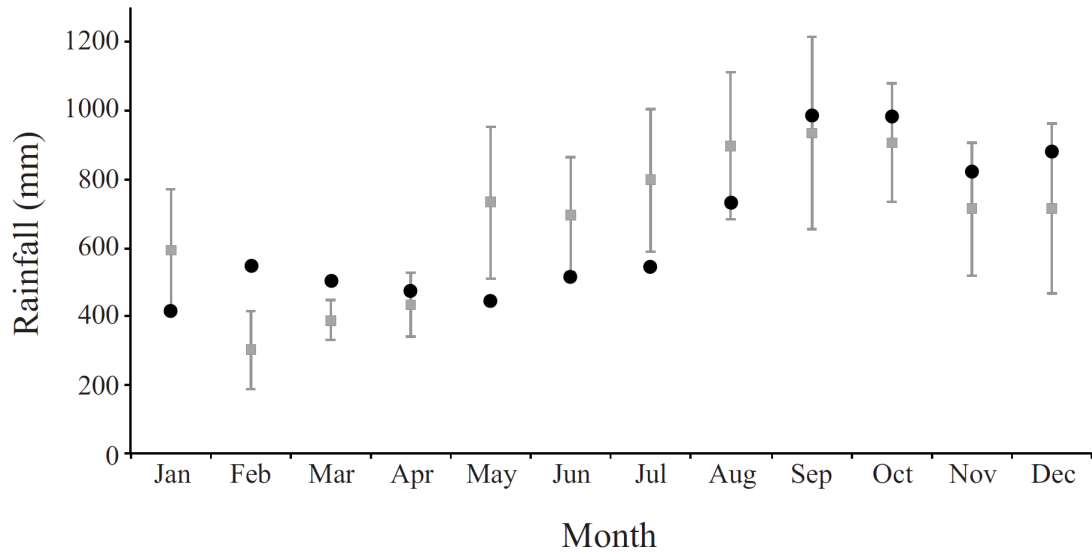


Fig. S3. Mean (± 1 standard deviation) monthly rainfall in Bahía Málaga for 2002 to 2009 (grey squares) and monthly rainfall during 2010 (black circles). Data from IDEAM station Malagueta (No. 5407003)