Table S1. Individual measurements (µg L^{-1}) for 50 (shaded) of 76 total analytes used in calculating ΣPAH values provided in Table S2 and percent compositions provided in Figure S1. Values represent the initial sample (0.2% HEWAF growout) or mean of initial samples (all others).

	2% HEWAF			1.2% HEWAF			0.4% HEWAF			0.2% HEWAF		
	Mean	% ΣTot.	% Σ50	Mean	% ΣTot.	% Σ50	Mean	% ΣTot.	% Σ50	Initial	% ΣTot.	% Σ50
1-Methyldibenzothiophene	0.17	0.28		0.10	0.28		0.03	0.30		0.01	0.43	
1-Methylnaphthalene	0.06	0.09		0.03	0.10		0.00	0.00		0.00	0.00	
1-Methylphenanthrene	0.97	1.63		0.56	1.64		0.17	1.62		0.07	2.34	
2,3,5-Trimethylnaphthalene	1.28	2.17		0.83	2.40		0.24	2.37		0.11	3.57	
2,6-Dimethylnaphthalene	0.62	1.05		0.35	1.02		0.13	1.23		0.04	1.42	
2/3-Methyldibenzothiophene	0.24	0.41		0.13	0.38		0.04	0.44		0.02	0.55	
2-Methylanthracene	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
2-Methylnaphthalene	0.05	0.08		0.02	0.07		0.00	0.00		0.00	0.00	
2-Methylphenanthrene	1.14	1.92		0.68	1.98		0.20	1.92		0.08	2.66	
3-Methylphenanthrene	1.01	1.70		0.56	1.61		0.17	1.67		0.07	2.19	
4/9-Methylphenanthrene	1.26	2.13		0.72	2.08		0.22	2.18		0.08	2.78	
4-Methyldibenzothiophene	0.53	0.89		0.31	0.90		0.09	0.90		0.05	1.48	
Acenaphthene	0.02	0.04	0.05	0.00	0.00	0.00	0.01	0.06	0.07	0.00	0.00	0.00
Acenaphthylene	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Anthracene	0.03	0.06	0.06	0.02	0.05	0.05	0.02	0.15	0.18	0.00	0.00	0.00
Benz(a)anthracene	0.04	0.07	0.09	0.03	0.08	0.09	0.01	0.13	0.16	0.01	0.45	0.55
Benzo(a)fluoranthene	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.16	0.20	0.00	0.00	0.00
Benzo(a)pyrene	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzo(b)fluoranthene	0.05	0.08	0.09	0.03	0.08	0.09	0.00	0.04	0.05	0.00	0.00	0.00
Benzo(b)fluorene	0.12	0.21	0.24	0.08	0.22	0.26	0.03	0.24	0.29	0.00	0.00	0.00
Benzo(b)thiophene	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Benzo(e)pyrene	0.09	0.15	0.17	0.05	0.14	0.17	0.02	0.16	0.19	0.00	0.00	0.00
Benzo(g,h,i)perylene	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00
Benzo(j+k)fluoranthene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biphenyl	0.06	0.10	0.11	0.04	0.12	0.14	0.01	0.14	0.17	0.00	0.00	0.00
C1 - Chrysenes	0.86	1.46	1.72	0.52	1.50	1.75	0.16	1.58	1.89	0.07	2.45	2.97
C1 - Dibenzothiophenes	1.14	1.92	2.26	0.64	1.85	2.16	0.18	1.78	2.13	0.09	3.03	3.67

C1 - Fluoranthenes/Pyrenes	0.62	1.05	1.24	0.33	0.96	1.12	0.11	1.05	1.25	0.00	0.00	0.00
C1 - Fluorenes	1.50	2.53	2.98	0.92	2.67	3.11	0.29	2.78	3.33	0.13	4.13	5.00
C1-Benzothiophenes	0.00	0.00		0.00	0.00		0.02	0.15		0.00	0.00	
C1-Decalins	0.00	0.00		0.00	0.00		0.02	0.17		0.00	0.00	
C1-Naphthalenes	0.07	0.12	0.15	0.05	0.13	0.16	0.00	0.00	0.00	0.00	0.00	0.00
C1-Naphthobenzothiophenes	0.59	0.99	1.16	0.34	0.99	1.15	0.12	1.16	1.39	0.00	0.00	0.00
C1-Phenanthrenes/Anthracenes	4.57	7.71	9.08	2.72	7.88	9.20	0.79	7.63	9.15	0.33	10.92	13.23
C2 - Chrysenes	1.06	1.79	2.11	0.60	1.74	2.03	0.19	1.82	2.18	0.00	0.00	0.00
C2 - Dibenzothiophenes	1.88	3.18	3.75	1.06	3.08	3.60	0.32	3.12	3.74	0.13	4.39	5.32
C2 - Fluoranthenes/Pyrenes	0.95	1.60	1.88	0.56	1.62	1.89	0.17	1.67	2.00	0.00	0.00	0.00
C2 - Fluorenes	2.73	4.61	5.43	1.68	4.89	5.70	0.49	4.73	5.67	0.19	6.20	7.51
C2-Benzothiophenes	0.00	0.00		0.00	0.00		0.01	0.11		0.00	0.00	
C2-Decalins	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
C2-Naphthalenes	1.71	2.89	3.41	1.07	3.10	3.62	0.31	3.01	3.60	0.16	5.08	6.16
C2-Naphthobenzothiophenes	0.76	1.28	1.50	0.48	1.40	1.64	0.14	1.38	1.65	0.00	0.00	0.00
C2-Phenanthrenes/Anthracenes	5.64	9.53	11.22	3.46	10.05	11.73	1.02	9.89	11.85	0.34	11.09	13.43
C3 - Chrysenes	0.70	1.18	1.39	0.34	0.98	1.15	0.14	1.36	1.63	0.00	0.00	0.00
C3 - Dibenzothiophenes	1.43	2.42	2.85	0.88	2.56	2.98	0.24	2.31	2.77	0.12	3.90	4.73
C3 - Fluoranthenes/Pyrenes	1.20	2.03	2.39	0.64	1.87	2.18	0.20	1.92	2.30	0.00	0.00	0.00
C3 - Fluorenes	2.69	4.54	5.35	1.71	4.95	5.78	0.52	5.01	6.00	0.00	0.00	0.00
C30-Hopane	0.67	1.13		0.36	1.05		0.15	1.42		0.00	0.00	
C3-Benzothiophenes	0.06	0.09		0.03	0.08		0.02	0.20		0.00	0.00	
C3-Decalins	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
C3-Naphthalenes	4.48	7.56	8.90	2.78	8.06	9.40	0.64	6.18	7.41	0.28	9.15	11.08
C3-Naphthobenzothiophenes	0.50	0.84	0.99	0.00	0.00	0.00	0.12	1.21	1.45	0.00	0.00	0.00
C3-Phenanthrenes/Anthracenes	3.49	5.90	6.95	2.10	6.10	7.12	0.56	5.43	6.51	0.24	8.00	9.69
C4 - Chrysenes	0.23	0.39	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4 - Dibenzothiophenes	1.72	2.90	3.41	1.40	4.06	4.74	0.08	0.80	0.96	0.00	0.00	0.00
C4-Benzothiophenes	0.06	0.10		0.00	0.00		0.01	0.08		0.00	0.00	
C4-Decalins	0.66	1.12		0.15	0.44		0.13	1.28		0.00	0.00	
C4-Fluoranthenes/Pyrenes	0.96	1.63	1.92	0.19	0.56	0.65	0.15	1.41	1.69	0.00	0.00	0.00
C4-Naphthalenes	3.24	5.47	6.44	2.03	5.89	6.87	0.53	5.11	6.12	0.22	7.22	8.74
C4-Naphthobenzothiophenes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C4-Phenanthrenes/Anthracenes	2.25	3.79	4.47	1.18	3.42	4.00	0.41	3.96	4.74	0.00	0.00	0.00
Carbazole	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Chrysene+Triphenylene	0.41	0.69	0.81	0.24	0.70	0.81	0.09	0.84	1.01	0.03	0.86	1.04

cis/trans-Decalin	0.00	0.00		0.00	0.00		0.01	0.12		0.00	0.00	
Dibenz(a,h)anthracene	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dibenzofuran	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.13	0.15	0.00	0.00	0.00
Dibenzothiophene	0.23	0.40	0.47	0.13	0.38	0.45	0.05	0.46	0.55	0.02	0.55	0.66
Fluoranthene	0.04	0.06	0.07	0.01	0.04	0.05	0.00	0.03	0.04	0.00	0.00	0.00
Fluorene	0.36	0.60	0.71	0.20	0.58	0.68	0.09	0.84	1.01	0.03	0.97	1.18
Indeno(1,2,3-cd)pyrene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Naphthalene	0.04	0.07	0.09	0.01	0.02	0.02	0.05	0.44	0.52	0.00	0.00	0.00
Naphthobenzothiophene	0.14	0.23	0.28	0.08	0.22	0.26	0.03	0.32	0.38	0.00	0.00	0.00
Perylene	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Phenanthrene	1.56	2.63	3.10	0.87	2.53	2.96	0.29	2.83	3.39	0.13	4.17	5.04
Pyrene	0.15	0.25	0.29	0.08	0.22	0.26	0.02	0.24	0.28	0.00	0.00	0.00
Retene	0.14	0.23		0.09	0.26		0.03	0.32		0.00	0.00	
ΣTotal	**59.21**	**100**		**34.46**	**100**		**10.30**	**100**		**3.05**	**100**	
Σ50	**50.31**		**100**	**29.53**		**100**	**8.60**		**100**	**2.52**		**100**

Table S2. Water quality (mean ± SEM) and ΣPAH data for slick A HEWAF exposures. ΣPAH concentrations were calculated in 2 ways: (1) using all samples collected daily from each replicate (geometric mean ± SEM); (2) in brackets, using only initial samples from each replicate (mean ± SEM). Sample sizes are provided in parentheses. All other water quality values reflect measurements collected daily during exposure period, except total ammonia (final only).

Treatment	ΣPAH (μg L^{-1})	Water temp. (C)	pH	D.O. (mg L^{-1})	Salinity (ppt)	Tot. amm. (μM)
24 h Juvenile						
Control	0.05 ± 0.04 (10) [0.04 ± 0.02 (5)]	26.8 ± 0.3	7.89 ± 0.05	5.92 ± 0.13	35 ± 1	15.2 ± 4.5
0.4% HEWAF	4.2 ± 1.9 (4) [8.6 ± 0.9 (2)]	28.0 ± 0.7	7.99 ± 0.11	5.89 ± 0.27	33 ± 1	5.1 ± 2.9
1.2% HEWAF	17 ± 5 (6) [30 ± 1 (3)]	27.0 ± 0	7.97 ± 0.18	5.57 ± 0.38	35 ± 1	11.8 ± 1.9
2% HEWAF	30 ± 7 (6) [50 ± 1 (3)]	26.3 ± 0.3	7.94 ± 0.08	6.00 ± 0.29	36 ± 0	24.2 ± 4.2
48 hpf						
Control	0.04 ± 0.01 (3) [0.06 (1)]	28.6 ± 0.6	8.14 ± 0.03	7.32 ± 0.26	32 ± 1	0
0.2% HEWAF*	1.2 ± 0.6 (3) [2.5 (1)]	28.3 ± 0.7	8.20 ± 0.05	6.53 ± 0.12	31 ± 0	0

*ΣPAH concentrations for 24 h and 48 h post-exposure washout periods were 0.3 and 0.2 μg L^{-1}, respectively.
Abbreviations: hpf; hours post-fertilization

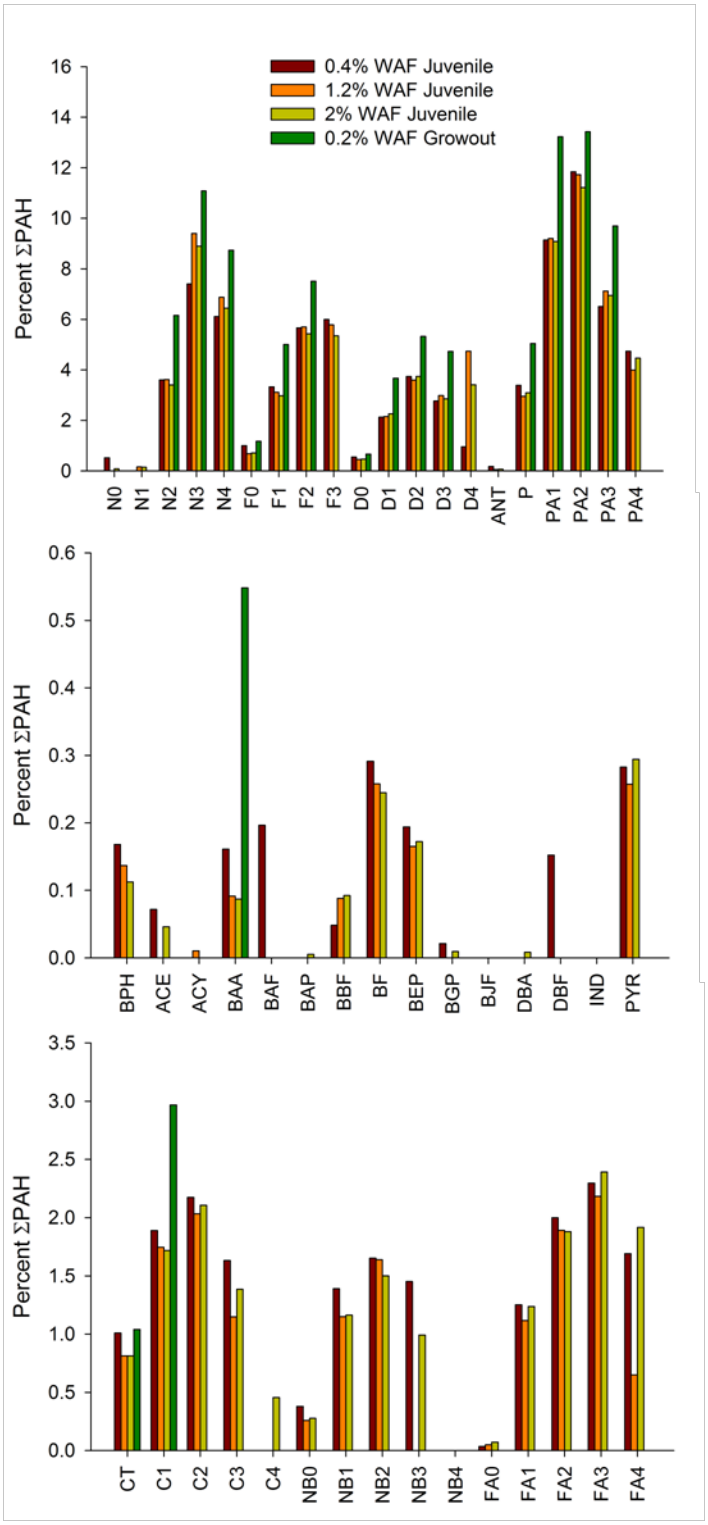

Figure S1. Initial (0.2% HEWAF growout) or mean initial (all others) percent composition for 50 PAH analytes as determined by GC-MS for each of the slick A HEWAF exposures.

Abbreviations: naphthalenes (N), biphenyl (BPH), acenaphthene (ACE), acenaphthylene (ACY), fluorenes (F), dibenzothiophenes (D), anthracene (ANT), phenanthrene (P), phenanthrenes/anthracenes (PA), chrysene +triphenylene (CT), chrysenes (C), naphthobenzothiophenes (NB), fluoranthenes (FA), benz(a)anthracene (BAA), benzo(a)fluoranthene (BAF), benzo(a)pyrene (BAP), benzo(b)fluoranthene (BBF), benzo(b)fluorene (BF), benzo(e)pyrene (BEP), benzo(g,h,i)perylene (BGP), benzo(j+k)fluoranthene (BJF), dibenz(a,h)anthracene (DBA), dibenzofuran (DBF), indeno(1,2,3-cd)pyrene (IND) and pyrene (PYR). Numbers indicate quantity of carbons added per alkylated homolog.

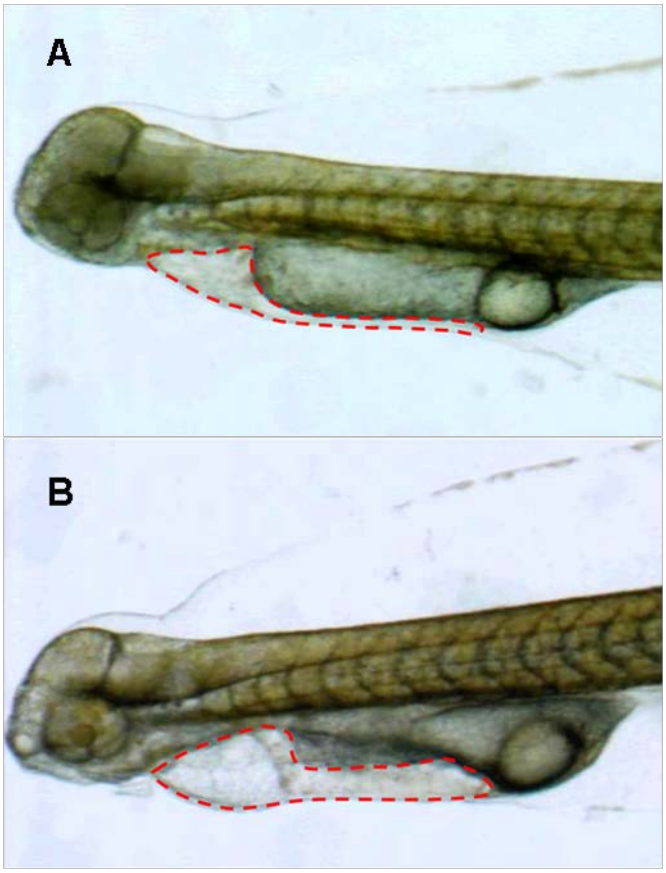

Figure S2. Representative still frame captures of larval mahi-mahi following 48 h exposure to (A) control conditions or (B) 1.2 µg L^{-1} ΣPAHs for 48 h initiated <12 hpf. Pericardial edema was measured as the area within a perimeter drawn from a freehand trace in ImageJ following the borders of the anterior pericardial region and contours of the yolk mass along the left side of the larvae. Example traces are illustrated by red dashed lines.

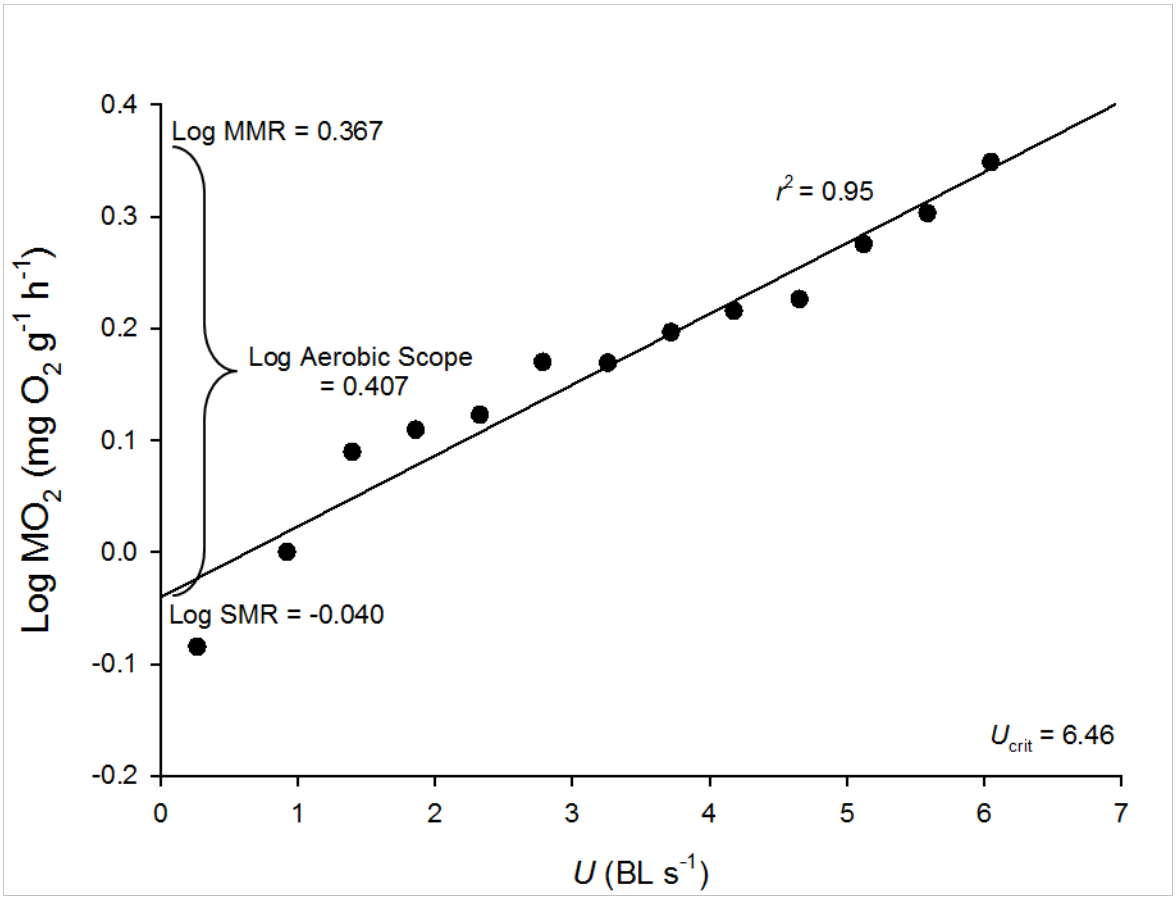

Figure S3. Example least-squares linear regression of metabolic rate vs. swimming speed (U) obtained from an individual juvenile mahi-mahi used in the swimming respirometry trials. Regressions yielding an $r^2 \geq 0.7$ were used for calculating SMR (y-intercept), MMR (extrapolated at U_{crit}) and aerobic scope (MMR - SMR). The resulting metabolic rate values were then normalized to a constant mass of 1 g by using the scaling constants and coefficients derived in Fig S4.

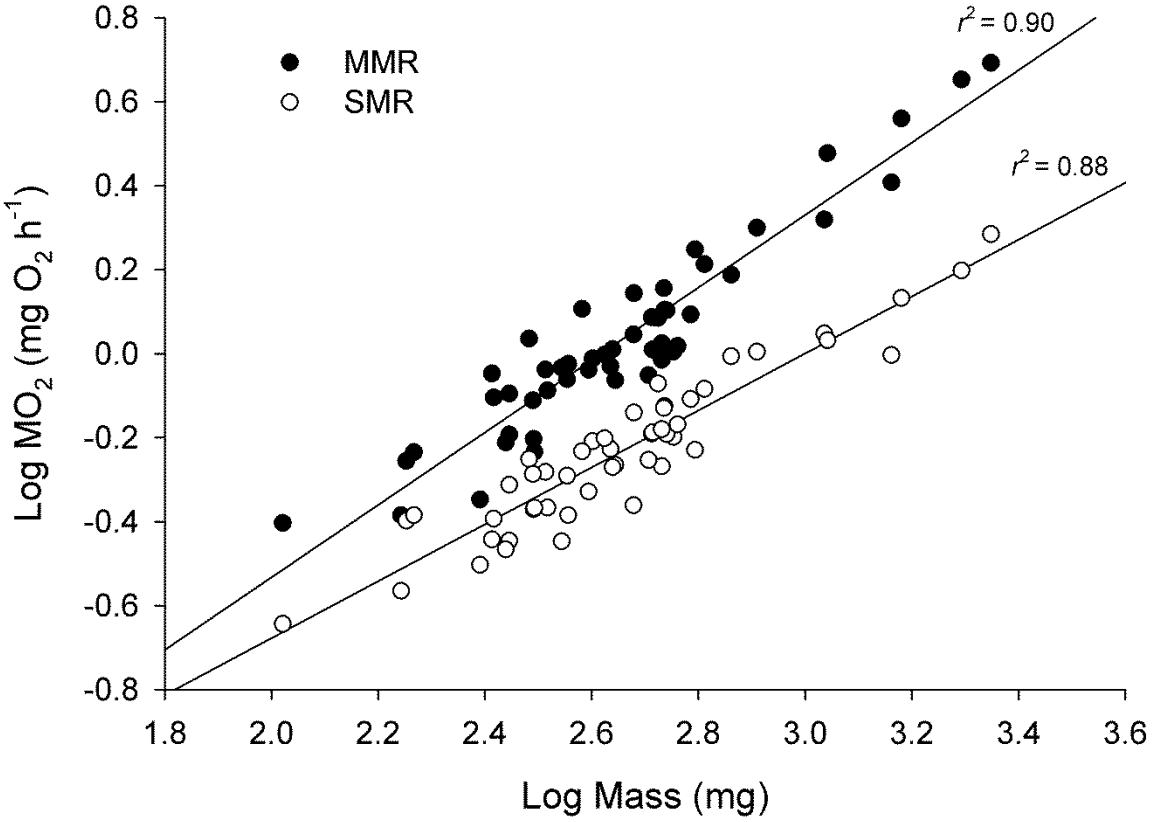

Figure S4. Determination of SMR and MMR mass scaling constants (y-intercept, *a*) and coefficients (slope, *b*) for juvenile mahi-mahi used to normalize metabolic rate measurements to a 1 g fish. Least-squares linear regressions of SMRs (open circles) and MMRs (filled circles) obtained by swimming respirometry were used to derive the following values, respectively: b = 0.68, log a = -2.03; b = 0.86, log a = -2.26. Adjusted SMR and MMR values were calculated for each individual by adding the difference of the corresponding residual from each regression line to the predicted SMR or MMR value for a 1 g fish.

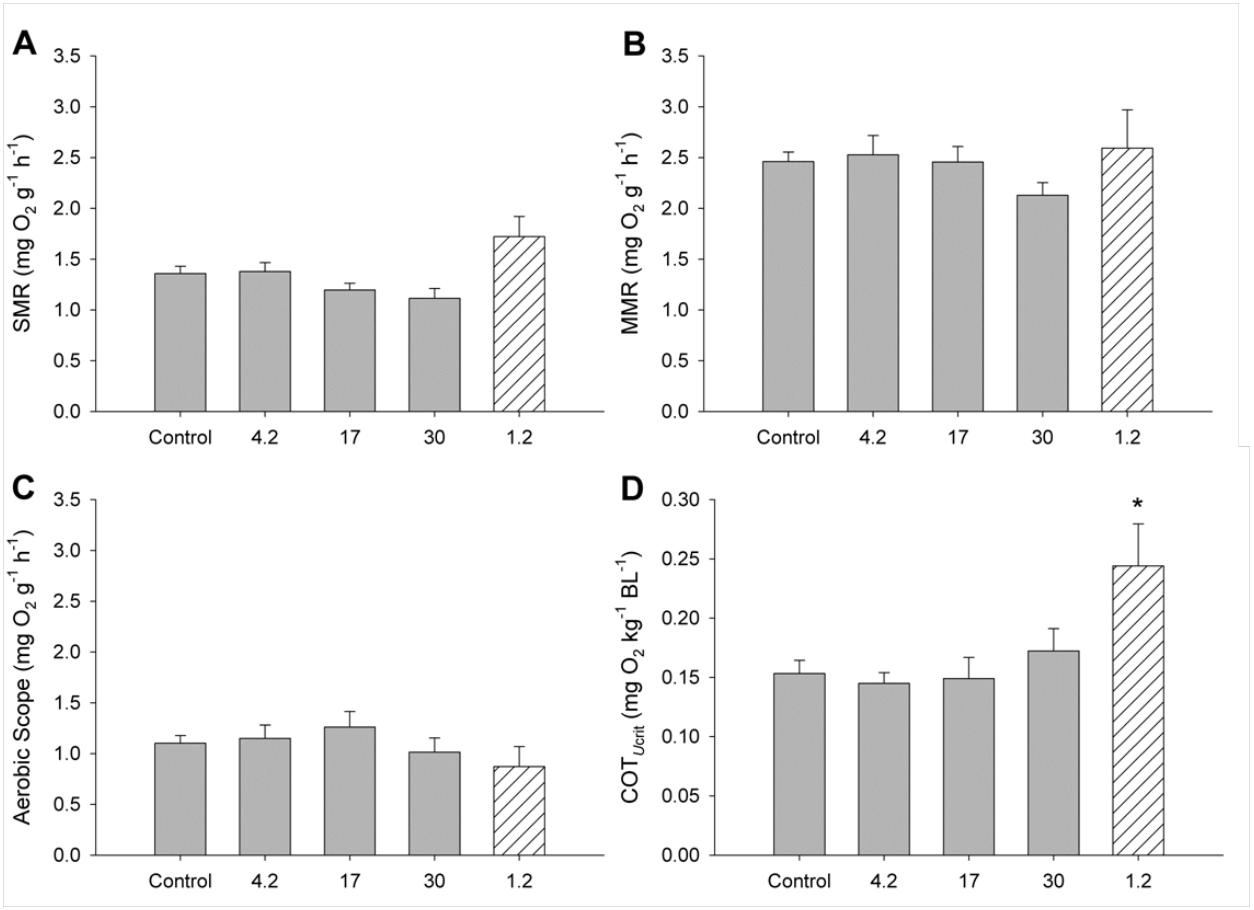

Figure S5. Raw data (not scaled for mass) comparisons of (A) standard metabolic rate (SMR), (B) maximum metabolic rate (MMR), (C) aerobic scope and (D) cost of transport at U_{crit} from swimming respirometry experiments of juvenile mahi-mahi exposed to 4.2, 17 or 30 µg L^{-1} ΣPAHs (n = 7, 9 and 8, respectively) for 24-h prior to swimming (shaded) or to 1.2 µg L^{-1} ΣPAHs (n = 5) for 48-h initiated <12 hpf (hatched bar) and then raised for ~25 d to the juvenile stage. The control group represents fish from all 4 control cohorts combined (n = 21). Data are presented as means ± SEM. *Significantly different from controls by one-way ANOVA and Holm-Sidak multiple comparison procedure ($P < 0.05$).