Supplemental materials for Martin and Genner, CJFAS

Fig S1. Abundance of rock-dwelling haplochromines (mean + standard error, SE) within the study area from 28 point counts at 5 m depth within 3 m and 180º of a stationary observer, across all sampling periods. Male (open bars) and female (closed bars) abundances represented separately for common taxa. Recent invaders to this species assemblage are denoted by (+). Individuals from the four study species (•) were identified to species and sex, and non-focal species within the mbuna group were identified to genus. At least five censuses were made per sampling period.

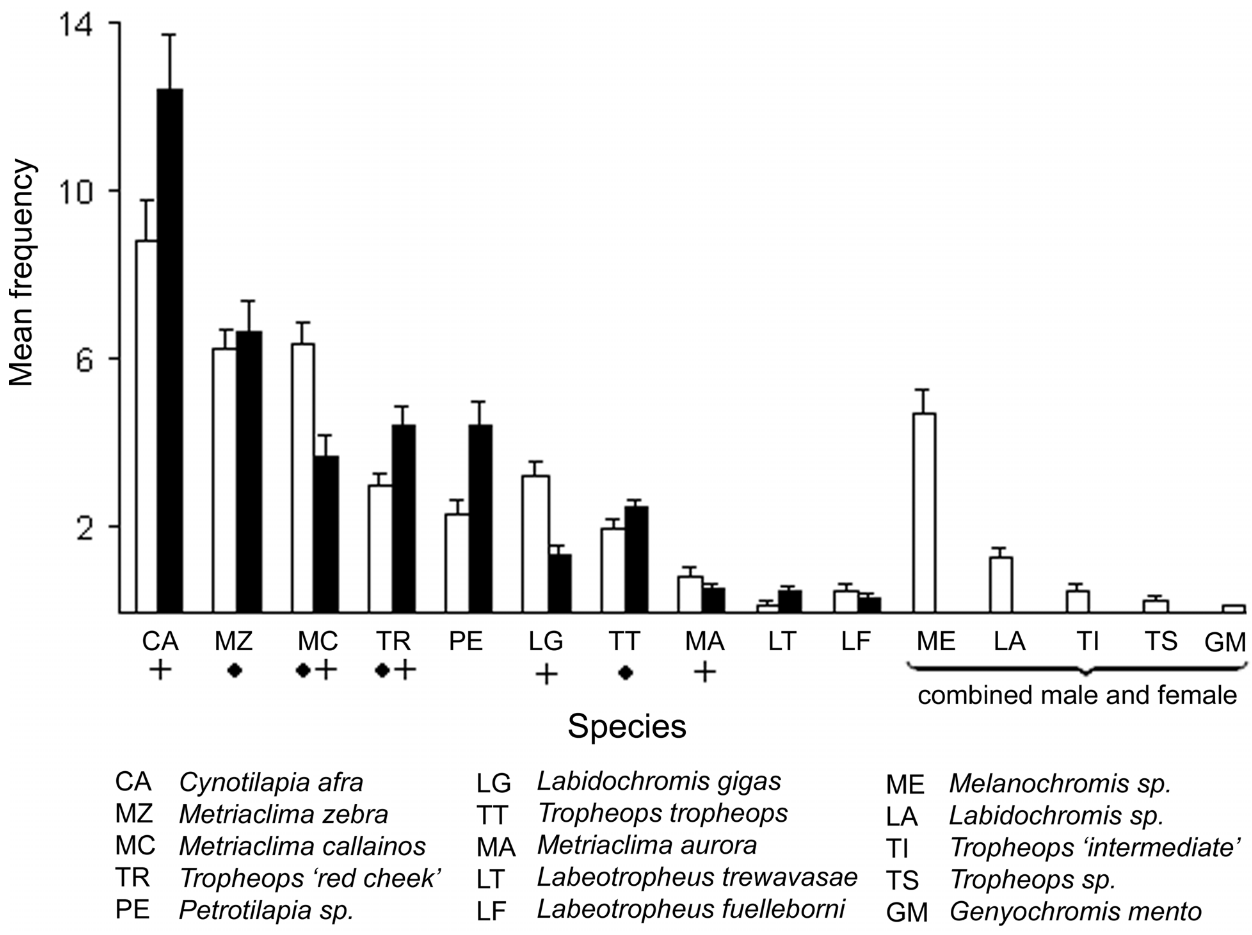

Fig. S2 Proportion (mean ± 95% confidence interval) of common algae in environmental samples and in the diets of study species during each sampling period. Points are absent if the genus was not recorded during the sampling period. The proportions of the most abundant filamentous algae, *Calothrix*, *Cladophora*, and *Pinnularia*, were significantly different across sampling periods (Welch's analysis of variance [ANOVA], arcsin-transformed data, *Calothrix*: $F_{5,43} = 16.731$, $P < 0.001$; *Cladophora*: $F_{4,40} = 4.484$, $P = 0.010$; *Pinnularia*: $F_{5,43} = 17.275$, $P < 0.001$). Four of the five most common phytoplankton genera also showed trends of changing abundance across sampling periods (Welch's ANOVA, *Anabaena*: $F_{4,51} = 2.678$, $P = 0.059$; *Asterionella*: $F_{4,57} = 2.726$, $P = 0.051$; *Stephanodiscus*: $F_{5,62} = 4.795$, $P = 0.004$; *Botryococcus*: $F_{5,62} = 6.282$, $P = 0.001$; *Microcystis*: $F_{5,62} = 1.132$, $P = 0.369$). However, beyond zooplankton and *Calothrix* (see Results: Dietary Overlap), there were no significant differences between species pairs in consumption of other abundant dietary components (2-way ANOVA, arcsin-transformed data; *Cladophora*: *Metriaclima*, $F_{1,237} = 0.012$, $P = 0.914$; *Tropheops*, $F_{1,230} = 0.030$, $P = 0.862$; *Pinnularia: Metriaclima*, $F_{1,237} = 0.855$, $P = 0.356$; *Tropheops*, $F_{1,230} = 0.131$, $P = 0.718$; *Stephanodiscus: Metriaclima*, $F_{1,237} = 0.244$, $P = 0.622$; *Tropheops*, $F_{1,230} = 0.174$, $P = 0.677$; *Botryococcus: Metriaclima*, $F_{1,237} = 0.305$, $P = 0.581$; *Tropheops*, $F_{1,230} = 0.959$, $P = 0.329$).

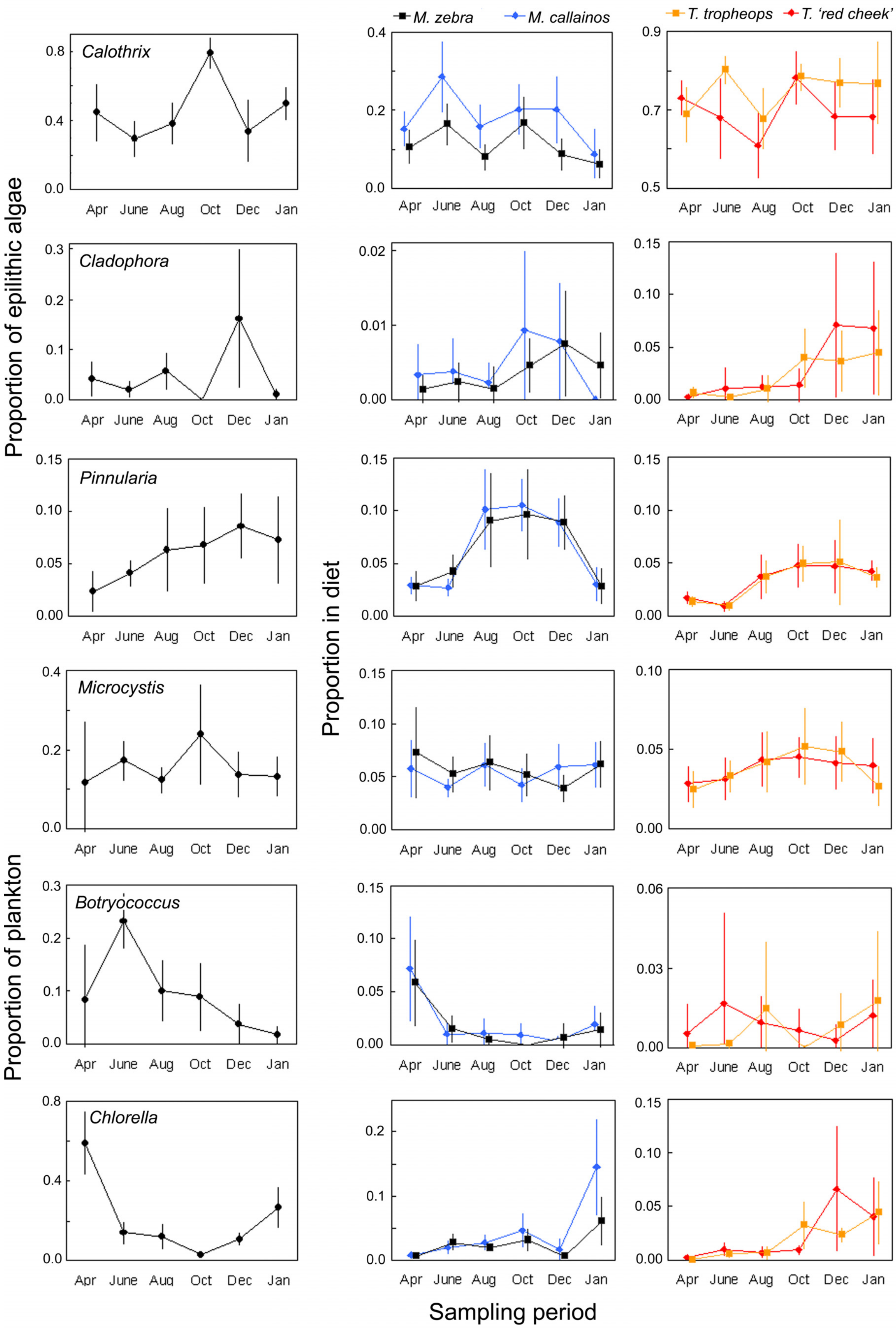
M. zebra
M. callainos
T. tropheops
T. 'red cheek'
Calothrix
Cladophora
Pinnularia
Microcystis
Botryococcus
Chlorella
Proportion of epilithic algae
Proportion of plankton
Proportion in diet
Sampling period
Apr
June
Aug
Oct
Dec
Jan

Table S1. Sampling periods and weather conditions.

Sampling period	Year	Month	Season	Wind intensity	Temperature (ºC)
1	2006	April	rainy (ending)	moderate	26
2		June	dry	strong	25.5
2		July	dry	strong	23.0
3		August	dry	moderate	24.0
4		October	dry	moderate	26.5
5		December	rainy (beginning)	low	27
6	2007	January	rainy	low	28

Table S2. Mean percentage volume of dietary components in samples from all collection periods. Concentrations below 0.1% are represented by t (trace). Benthic diatoms and filamentous algae occurring in plankton samples were likely suspended in the water column, while some phytoplankton was caught in epilithic algae.

	Metriaclima Zebra		*Metriaclima callainos*		*Tropheops 'red cheek'*		*Tropheops tropheops*		Plankton	Epilithic Algae
	M	F	M	F	M	F	M	F		
Filamentous algae										
Calothrix	11.8	10.2	15.1	20.9	68.5	69.8	76	73.6	0.3	42.3
Cladophora	0.5	0.3	0.4	0.5	3.2	3	2.1	2.6	0.1	5.6
Oedogonium	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.1	10.1	0.3
Oscillatoria	0.5	0.6	0.6	0.3	0.8	0.7	1.2	1.4	0.4	1.3
Benthic diatoms										
Amphora	0.2	0.2	0.1	0.1	t	t	t	0.1	0.6	0.4
Cocconeis	t	T	-	0.1	t	-	-	-	t	t
Cymbella	1	1	0.9	1.3	0.9	0.8	0.7	0.7	0.8	1.1
Gomphonema	0.4	0.4	0.3	0.4	0.4	0.5	0.3	0.5	0.1	0.7
Gyrosigma	0.1	T	-	t	-	-	-	-	0.1	t
Navicula	1	0.5	0.9	0.8	0.5	0.6	0.4	0.4	1.9	1.0

Nitzschia	T	-	t	-	-	-	-	-	t	0.2
Pinnularia	6.9	5.6	5.6	6.6	3.6	3.1	3	3.5	2.1	5.9
Synedra	0.1	0.1	0.3	0.2	t	t	t	t	2	0.2
Phytoplankton										
Anabaena	2.6	2.9	4.3	4.5	3	1.3	1.4	2.3	17	0.2
Asterionella	t	T	t	t	t	t	t	t	9.2	t
Aulacoseira	t	T	0.1	t	t	t	t	-	2.9	0.1
Botryococcus	1.3	2.1	2.1	2.1	1	0.8	0.3	1.1	10.4	0.3
Chlorella	t	0.2	0.1	0.3	0.1	t	0.2	0.1	0.8	0.2
Closterium	-	-	-	0.1	-	-	-	-	0.2	-
Coelastrum	0.1	0.1	0.2	0.1	0.1	t	0.1	0.1	0.6	0.1
Cosmarium	t	-	-	t	-	-	-	-	0.1	-
Cymatopleura	0.1	T	t	t	-	-	-	-	1	0.2
Microcystis	5.4	6	4.9	5.7	3.2	4.4	3.3	4.3	14.5	8.5
Pediastrum	-	-	-	0.3	-	-	-	-	0.2	-
Scenedesmus	-	T	t	t	t	t	t	t	t	t
Stephanodiscus	1	1	1.2	1	0.4	0.3	0.3	0.3	6.5	0.6
Surirella	t	T	t	t	-	t	-	t	0.3	t
Zooplankton [a]	21.9	26.8	20.7	12.1	3.8	4.2	1.6	1.2	18	0.1
Cladocera									4	

Copepoda									10.6	
Detritus	31.1	30.2	31.1	29.7	8.8	8.3	7.1	7.1		42.3
Silt	13.5	11.4	10.7	12.6	1.5	1.9	1	1.5		16.6
N	61	62	66	60	63	58	61	60	68	49

[a] Zooplankton contained in stomachs was masticated extensively and generally could not be identified to Class.

Table S3. Chases initiated by *Metriaclima* sp. territorial males toward intruding fishes during all sampling periods. The second and third lines in each box represent Wilcoxon signed-rank test *Z* and *P* values, respectively. Groups in **bold** were chased significantly more often than expected and groups in *italics* were chased significantly less often. TRO = *Tropheops* sp., LBD = *Labidochromis* sp., MEL = *Melanochromis* sp., CYA = *Cynotilapia afra*, PET = *Petrotilapia* sp.

Period	*n*	**MCA**		**MZE**		**TRO**	**LBD**	**MEL**	**CYA**	**PET**
		♂	♀	♂	♀					
Metriaclima zebra (MZE)										
Global	82	obs<exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp
		306.5	*59.5*	**-111.5**	**-716.5**	*449.5*	*406.0*	*401.0*	*373.5*	*475.5*
		<0.001	*0.035*	**<0.001**	**<0.001**	*0.003*	*0.003*	*<0.001*	*0.009*	*<0.001*
April	10	obs>exp	no obs.	obs>exp	obs>exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp
		11		-2	**-17**	6	-0.5	-0.5	*16.5*	1
		0.078		0.5	**0.016**	0.461	1	1	*0.055*	0.75
June/July	16	obs<exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp
		10	2.5	-0.5	**-27**	8.5	16.5	*22.5*	-1.5	*22*
		0.195	0.625	1	**0.014**	0.531	0.105	*0.004*	0.91	*0.054*
August	15	obs<exp	obs>exp	obs>exp	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp
		15.5	1	-5	**-21.5**	15.5	19.5	*24*	6.5	21
		0.074	0.875	1	**0.008**	0.305	0.185	*0.032*	0.685	0.11
October	14	obs<exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp	obs<exp	obs>exp	obs>exp
		3.5	3	-6.5	-12	*19.5*	*18*	*18*	-6.5	1.5

		0.438	0.25	0.125	0.109	*0.047*	*0.008*	*0.008*	0.557	0.887
December	13	obs<exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp
		10	8	-6.5	**-27**	3	*25*	*17.5*	*37*	27.5
		0.195	0.219	0.125	**0.013**	0.791	*0.052*	*0.084*	*0.001*	0.002
January	14	obs<exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp
		10	1.5	-9.5	**-21.5**	*32.5*	6	4	*17.5*	*33*
		0.195	0.5	0.063	**0.008**	*0.021*	0.662	0.641	*0.08*	*0.007*
Metriaclima callainos (MCA)										
Global	78	obs>exp	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp
		-364.5	**-383**	*233*	70.0	*811*	177.5	*458.5*	*713.5*	*410.5*
		<0.001	**<0.001**	*0.012*	0.353	*<0.001*	0.096	*<0.001*	*<0.001*	*<0.001*
April	10	obs>exp	obs>exp	obs<exp	obs>exp	obs<exp	obs>exp	obs<exp	obs<exp	obs<exp
		-7.5	-1	3	-2	*9.6*	-4	6.5	3.5	3
		0.063	0.875	0.375	0.5	*0.063*	0.25	0.125	0.438	0.25
June/July	16	obs>exp	obs>exp	obs>exp	obs<exp	obs<exp	obs>exp	obs<exp	obs<exp	obs<exp
		-32	**-14**	0.5	8.5	*35*	-2.5	*33*	*39*	*22*
		0.002	**0.016**	0.5	0.359	*0.011*	0.82	*0.001*	*<0.001*	*0.092*
August	12	obs>exp	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp
		-7.5	**-14**	12	12	*24*	*22.5*	*8.5*	*33*	*18.5*
		0.063	**0.016**	0.109	0.109	*0.032*	*0.004*	*0.094*	*0.001*	*0.064*
October	13	obs>exp	obs>exp	obs<exp	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp
		-9.5	**-14**	12.5	-2	*24*	8	*22.5*	*15.5*	*17.5*
		0.063	**0.016**	0.232	0.813	*0.032*	0.219	*0.004*	*0.074*	*0.084*

December	13	obs>exp	obs>exp	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp
		-5	**-21.5**	2.5	5.5	*24.5*	*17.5*	12	*15.5*	*15.5*
		0.125	**0.008**	0.846	0.188	*0.01*	*0.084*	0.109	*0.074*	*0.074*
January	14	obs>exp	obs>exp	obs<exp	obs>exp	obs<exp	obs>exp	obs<exp	obs<exp	obs<exp
		-13	**-10.5**	*20.5*	-4	*34*	6	6.5	*33*	3.5
		0.031	**0.031**	*0.037*	0.641	*0.005*	0.677	0.557	*0.001*	0.672

Table S4. Chases initiated by *Tropheops* sp. territorial males toward intruding fishes during all sampling periods. The second and third lines in each box represent Wilcoxon signed-rank test *Z* and *P* values, respectively. Groups in **bold** were chased significantly more often than expected and groups in *italics* were chased significantly less often. MAY = *Metriaclima* sp., LBD = *Labidochromis* sp., MEL = *Melanochromis* sp., CYA = *Cynotilapia afra*, PET = *Petrotilapia* sp.

Period	*n*	**TRD**		**TRT**		**MET**	**LBD**	**MEL**	**CYA**	**PET**
		♂	♀	♂	♀					
T. tropheops (TRT)										
Global	74	obs>exp	obs>exp	obs>exp	obs>exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp
		-62.0	**-367**	**-94.5**	**-383.5**	*768.5*	**-473.5**	-245	*842.0*	*636.5*
		0.070	**<0.001**	**<0.001**	**<0.001**	*<0.001*	**<0.001**	0.064	*<0.001*	*<0.001*
April	10	obs<exp	obs>exp	obs>exp	obs>exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp
		-2.5	-5	-1.5	-5	*21.5*	-0.7	-5	7.5	9.5
		0.688	0.125	0.5	0.125	*0.027*	0.297	0.438	0.156	0.289
June/July	14	obs>exp	obs>exp	obs>exp	obs>exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp
		0	**-22.5**	-1.5	-9	7.5	**-24.5**	-10	*32.5*	*22.5*
		1	**0.018**	0.5	0.156	0.67	**0.008**	0.18	*0.021*	*0.004*
August	12	obs>exp	obs>exp	obs>exp	obs>exp	obs<exp	obs>exp	obs<exp	obs<exp	obs<exp
		-1	-14	-5	**-10.5**	7	-11.5	3.5	20	17
		0.75	0.055	0.125	**0.031**	0.622	0.33	0.803	0.129	0.204
October	12	obs>exp	obs>exp	obs>exp	obs>exp	obs<exp	obs>exp	obs<exp	obs<exp	obs<exp
		-4	**-15**	-3.5	**-15**	*23*	**-21.5**	3.5	21	*23.5*

		0.25	**0.031**	0.375	**0.031**	*0.077*	**0.027**	0.75	0.11	*0.014*
December	13	obs>exp	obs>exp	obs>exp	obs>exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp
		-1.5	-7.5	-4	**-14**	*30.5*	-0.5	-26.5	*36*	*23*
		0.5	0.063	0.25	**0.016**	*0.033*	0.125	0.068	*0.002*	*0.042*
January	13	obs<exp	obs>exp	obs>exp	obs>exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp
		-3.5	-6.5	-5	**-22.5**	*45.5*	**-20.5**	-7.5	*33*	19
		0.5	0.125	0.125	**0.004**	*<0.001*	**0.033**	0.406	*0.001*	0.151
T. ‘red cheek’ (TRD)										
Global	77	obs>exp	obs>exp	obs>exp	obs>exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp
		-94.0	**-513.5**	**-10.0**	**-92.0**	*963.5*	**-509**	-271	*745.0*	*568.5*
		<0.001	**<0.001**	**0.413**	**0.033**	*<0.001*	**<0.001**	0.051	*<0.001*	*<0.001*
April	10	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp	obs>exp	obs<exp	obs<exp	obs<exp
		-6.5	-6.5	-1.5	1.5	11.5	**-16**	5	10.5	3.5
		0.125	0.125	0.5	0.5	0.203	**0.023**	0.438	0.25	0.734
June/July	14	obs>exp	obs>exp	obs>exp	obs<exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp
		-3	-12.5	-0.5	1.5	18	**-17**	-4	15.5	*45.5*
		0.25	0.164	1	0.813	0.274	**0.016**	0.745	0.305	*<0.001*
August	12	obs>exp	obs>exp	obs>exp	obs>exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp
		-7.5	**-33**	0	-2.5	*28*	2	-19	*30*	4.5
		0.063	**0.001**	1	0.688	*0.01*	0.848	0.101	*0.016*	0.652
October	12	obs>exp	obs>exp	obs<exp	obs>exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp
		-0.5	**-13**	1.5	-2	*39*	-22	**-28**	13	*21.5*
		1	**0.031**	0.5	0.5	*<0.001*	0.051	**0.025**	0.278	*0.027*

December	13	obs>exp	obs>exp	obs>exp	obs>exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp
		-3	**-10.5**	-0.5	-7.5	*24*	-2.5	-8.5	19	2
		0.25	**0.031**	1	0.156	*0.032*	0.656	0.432	0.102	0.898
January	16	obs>exp	obs>exp	obs<exp	obs>exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp
		-1.5	**-18**	0.5	-7.5	*50*	**-41.5**	-6.5	*44*	*25*
		0.5	**0.008**	1	0.063	*0.002*	**0.006**	0.557	*0.01*	*0.024*

Table S5. Fishes excluded by male *Metriaclima* sp. from territories during all sampling periods. The second and third lines in each box represent Wilcoxon signed-rank test *Z* and *P* values, respectively. Groups in **bold** invaded male territories significantly less often than expected and groups in *italics* invaded territories significantly more often. MET = all other *Metriaclima* sp., TRO = *Tropheops* sp., LBD = *Labidochromis* sp., MEL = *Melanochromis* sp., CYA = *Cynotilapia afra*, PET = *Petrotilapia* sp., LBO = *Labeotropheus* sp.

Period	*n*	**MCA**		**MZE**		**MET**	**TRO**	**LBD**	**MEL**	**CYA**	**PET**	**LBO**
		♂	♀	♂	♀							
Metriaclima zebra (MZE)												
Global	82	obs>exp	obs<exp	obs<exp	obs<exp	obs>exp	obs>exp	obs>exp	obs>exp	obs<exp	obs<exp	obs<exp
		208.5	**-879.5**	**-1586.5**	**-642.5**	*-430.5*	*920.5*	*496.5*	-19.5	-296.5	-338.5	**-607.5**
		0.338	**<0.001**	**<0.001**	**0.002**	*0.046*	*<0.001*	*0.021*	0.929	0.172	0.118	**0.004**
Apr.	10	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs<exp	obs<exp	obs>exp	obs<exp	obs>exp
		12.5	**-27.5**	**-20.5**	17.5	**-27.5**	12.5	-14.5	**-25.5**	*25.5*	**-26.5**	0.5
		0.232	**0.002**	**0.037**	0.084	**0.002**	0.232	0.16	**0.006**	*0.006*	**0.004**	1
June/	16	obs<exp	obs>exp	obs<exp	obs>exp	obs<exp	obs>exp	obs>exp	obs>exp	obs<exp	obs>exp	obs>exp
July		-10	-18	**-54**	10	-10	31	22	6	**-39**	-5	23
		0.623	0.375	**0.003**	0.632	0.623	0.114	0.274	0.772	**0.044**	0.811	0.247
Aug.	15	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs>exp	obs>exp	obs<exp	obs>exp	obs<exp
		-4	**-39**	**-58**	-27	**-55**	*54*	-4	6	-29	6	17
		0.847	**0.025**	**<0.001**	0.132	**0.001**	*0.001*	0.847	0.762	0.107	0.762	0.359
Oct.	14	obs>exp	obs<exp	obs<exp	obs<exp	obs>exp	obs>exp	obs>exp	obs>exp	obs<exp	obs>exp	obs<exp
		-2.5	-17.5	**-51.5**	-20.5	-15.5	-5.5	24.5	*31.5*	-8.5	4.5	**31.5**

		0.891	0.288	**<0.001**	0.21	0.357	0.747	0.135	*0.048*	0.614	0.808	**0.048**
Dec.	13	obs>exp	obs<exp	obs<exp	obs<exp	obs>exp	obs<exp	obs>exp	obs>exp	obs>exp	obs<exp	obs>exp
		2.5	-23.5	**-44.5**	-23.5	-5.5	-9.5	14.5	5.5	0.5	-14.5	8.5
		0.893	0.105	**<0.001**	0.11	0.735	0.542	0.34	0.735	1	0.34	0.576
Jan.	14	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp
		14.5	**-37.5**	**-52.5**	-27.5	-6.5	*49.5*	*39.5*	-24.5	-16.5	-20.5	**38.5**
		0.382	**0.016**	**<0.001**	0.088	0.703	*0.001*	*0.01*	0.131	0.318	0.211	**0.012**
Metriaclima callainos (MCA)												
Global	78	obs<exp	obs<exp	obs>exp	obs<exp	obs>exp	obs>exp	obs>exp	obs>exp	obs<exp	obs<exp	obs>exp
		-1455.5	**-1242.5**	34.5	-288.5	*-506.5*	*1161.5*	176.5	-103.5	**-458.5**	-115.5	-256.5
		<0.001	**<0.001**	0.862	0.144	*0.009*	*<0.001*	0.374	0.602	**0.019**	0.561	0.195
Apr.	10	obs<exp	obs<exp	obs>exp	obs<exp	obs>exp	obs>exp	obs<exp	obs>exp	obs<exp	obs<exp	obs>exp
		-19.5	-15.5	15.5	-12.5	-17.5	*23.5*	**-23.5**	-1.5	-17.5	**-19.5**	8.5
		0.043	0.125	0.125	0.223	0.08	*0.014*	**0.014**	0.922	0.084	**0.045**	0.416
June/	16	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs>exp	obs>exp	obs>exp	obs<exp	obs>exp
July		**-60**	**-53**	-32	-17	-32	*34*	-13	15	-1	-3	2
		<0.001	**0.001**	0.07	0.351	0.073	*0.055*	0.48	0.421	0.966	0.88	0.934
Aug.	12	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs>exp	obs<exp	obs>exp	obs>exp	obs<exp
		-38	**-38**	-1	-6	-20	*32*	1	-7	16	2	**29**
		0.001	**0.001**	0.955	0.662	0.126	*0.008*	0.959	0.609	0.226	0.91	**0.021**
Oct.	13	obs<exp	obs<exp	obs>exp	obs<exp	obs>exp	obs>exp	obs>exp	obs<exp	obs<exp	obs>exp	obs<exp
		-39	**-39**	6	-4	3.0	*30*	13	-9	-23	13	16

		<0.001	**<0.001**	0.677	0.791	0.85	*0.016*	0.339	0.519	0.077	0.339	0.233
Dec.	13	obs<exp	obs<exp	obs>exp	obs>exp	obs>exp	obs>exp	obs>exp	obs>exp	obs<exp	obs<exp	obs>exp
		-45.5	-27.5	16.5	10.5	-5.5	13.5	9.5	-8.5	-18.5	-7.5	-15.5
		<0.001	0.055	0.273	0.487	0.722	0.376	0.542	0.588	0.216	0.635	0.297
Jan.	14	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs>exp	obs>exp	obs<exp	obs<exp	obs<exp	obs>exp
		-51.5	**-38.5**	-14.5	-20.5	*-27.5*	*52.5*	*40.5*	-9.5	**-39.5**	-10.5	10.5
		<0.001	**0.013**	0.391	0.211	*0.087*	*<0.001*	*0.008*	0.583	**0.011**	0.542	0.531

Table S6. Fishes excluded by male *Tropheops* sp. from territories during all sampling periods. The second and third lines in each box represent Wilcoxon signed-rank test Z and P values, respectively. Groups in **bold** invaded male territories significantly less often than expected and groups in *italics* invaded territories significantly more often. TRO = all other *Tropheops* sp., MET = *Metriaclima* sp., LBD = *Labidochromis* sp., MEL = *Melanochromis* sp., CYA = *Cynotilapia afra*, PET = *Petrotilapia* sp., LBO = *Labeotropheus* sp.

Period	*n*	**TRD**		**TRT**		**TRO**	**MET**	**LBD**	**MEL**	**CYA**	**PET**	**LBO**
		♂	♀	♂	♀							
T. 'orange chest' (TRT)												
Global	74	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs<exp	obs<exp	obs>exp	obs<exp	obs<exp
		-1053.5	**-985.5**	**-1178.5**	**-706.5**	**-860.5**	*679.5*	**-809.5**	**-295.5**	34.5	85.5	**-575.5**
		<0.001	**<0.001**	**<0.001**	**<0.001**	**<0.001**	*<0.001*	**<0.001**	**0.105**	0.851	0.642	**0.001**
Apr.	10	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp	obs<exp	obs>exp
		-4.5	**-27.5**	**-27.5**	-17.5	-17.5	14.5	-8.5	-7.5	-12.5	-4.5	8.5
		0.676	**0.002**	**0.002**	0.078	0.074	0.152	0.418	0.477	0.232	0.678	0.418
June/	14	obs<exp	obs<exp	obs<exp	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs>exp	obs>exp
July		-24.5	-19.5	**-45.5**	-2.5	**-32.5**	-5.5	-29.5	-22.5	12.5	16.5	-0.5
		0.091	0.185	**<0.001**	0.879	**0.02**	0.735	**0.038**	0.123	0.414	0.266	0.985
Aug.	12	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs>exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp
		-37	-9	**-36**	-21	-6	9	-13	11	14	-6	**38**
		0.001	0.505	**0.002**	0.106	0.662	0.519	0.329	0.424	0.291	0.677	**0.001**
Oct.	12	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs<exp	obs<exp	obs>exp	obs>exp	obs<exp

		-38	**-36**	**-27**	**-30**	**-39**	*27*	**-24**	-12	3	1	17
		0.001	**0.002**	**0.033**	**0.015**	**<0.001**	*0.034*	**0.061**	0.367	0.85	0.97	0.201
Dec.	13	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs<exp	obs>exp	obs>exp	obs>exp	obs<exp
		-45.5	**-45.5**	**-35.5**	**-40.5**	**-32.5**	*30.5*	**-44.5**	3.5	3.5	-3.5	**32.5**
		<0.001	**<0.001**	**0.01**	**0.002**	**0.021**	*0.033*	**<0.001**	0.826	0.839	0.839	**0.02**
Jan.	13	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs<exp	obs<exp	obs<exp	obs>exp	obs>exp
		-31.5	**-41.5**	**-45.5**	**-24.5**	**-32.5**	*38.5*	**-28.5**	**-33.5**	-11.5	12.5	9.5
		0.026	**0.002**	**<0.001**	**0.09**	**0.02**	*0.005*	**0.046**	**0.017**	0.455	0.414	0.53
T. 'red cheek' (TRD)												
Global	77	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs<exp	obs<exp	obs>exp	obs<exp	obs<exp
		-1404.5	**-819.5**	**-1090.5**	**-590.5**	**-1054.5**	*667.5*	**-763.5**	**-368.5**	*87.5*	-114.5	**-622.5**
		<0.001	**<0.001**	**<0.001**	**0.002**	**<0.001**	*<0.001*	**<0.001**	**0.061**	*0.660*	0.564	**0.001**
Apr.	10	obs<exp	obs>exp	obs<exp	obs>exp	obs<exp	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp
		-17.5	-8.5	-17.5	-8.5	-8.5	1.5	-15.5	1.5	-7.5	-5.5	0.5
		0.08	0.416	0.08	0.416	0.432	0.922	0.131	0.922	0.492	0.625	0.984
June/	14	obs<exp	obs>exp	obs<exp	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs>exp
July		**-43.5**	22.5	**-38.5**	-2.5	**-52.5**	-6.5	-15.5	-9.5	-30.5	26.5	15.5
		0.004	0.167	**0.012**	0.891	**<0.001**	0.715	0.349	0.583	0.056	0.104	0.349
Aug.	12	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs<exp	obs<exp	obs>exp	obs<exp	obs>exp
		-39	**-33**	-21	-13	**-39**	-1	-11	**-33**	*31*	-15	5
		<0.001	**0.007**	0.11	0.339	**<0.001**	0.97	0.424	**0.007**	*0.012*	0.266	0.733
Oct.	12	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs<exp	obs>exp	obs<exp	obs>exp	obs<exp

		-39	**-27**	-21	**-36**	**-27**	*35*	**-29**	-2	-8	3	**39**
		<0.001	**0.032**	0.105	**0.002**	**0.033**	*0.003*	**0.021**	0.895	0.569	0.85	**<0.001**
Dec.	13	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp
		-45.5	**-34.5**	**-45.5**	**-33.5**	-9.5	*37.5*	**-37.5**	-18.5	-5.5	-6.5	**29.5**
		<0.001	**0.013**	**<0.001**	**0.016**	0.53	*0.006*	**0.006**	0.21	0.735	0.685	**0.038**
Jan.	16	obs<exp	obs<exp	obs<exp	obs<exp	obs<exp	obs>exp	obs<exp	obs>exp	obs>exp	obs<exp	obs<exp
		-68	**-52**	**-52**	-29	**-68**	*41*	-16	-10	13	29	31
		<0.001	**0.005**	**0.005**	0.14	**<0.001**	*0.034*	0.433	0.623	0.528	0.141	0.113