

SUPPLEMENTARY MATERIAL S5

TABLE S5 | Relative importance of environmental factors, grouped by local and watershed scale, on turnover. This table includes multiple R^2 , P -value (P), beta coefficients (β), structure coefficients (r_s), and each predictor's total unique (U), total common (C), and total variance (Total) in the regression equation. Commonality analysis was not conducted when the number of factors was < 2 . Only environmental features best correlated with fish β -diversity (see Tab. S3), grouped as local-scale and watershed-scale, were used as predictor variables.

Turnover facet	Scale	β	P	r_s	Commonality analysis		Total
					U	C	
Taxonomic							
ses. β .RC.all ($R^2=0.14$; $P<0.001$)	Local	0.17	<0.001	0.659	0.025	0.0185	0.061
	Watershed	0.23	<0.001	0.815	0.045	0.0185	0.094
ses. β .RC.ref ($R^2=0.44$; $P<0.001$)	Local	0.60	<0.001	0.986	0.297	-	0.423
ses. β .RC.new ($R^2=0.08$; $P<0.001$)	Local	0.12	0.007	0.563	0.015	0.0004	0.027
	Watershed	0.16	<0.001	0.762	0.023	0.0004	0.049
ses. β .RC.old ($R^2=0.11$; $P<0.001$)	Local	0.13	0.015	0.578	0.017	-	0.038
	Watershed	0.06	0.257	0.473	0.004	-	0.024
Functional							
ses. β .MPD.all ($R^2=0.09$; $P<0.001$)	Local	0.19	<0.001	0.664	0.037	0.0019	0.040
	Watershed	0.23	<0.001	0.770	0.049	0.0019	0.054
ses. β .MPD.ref ($R^2=0.28$; $P<0.001$)	Local	0.45	<0.001	0.774	0.199	-	0.168
ses. β .MPD.new ($R^2=0.20$; $P<0.001$)	Local	0.24	<0.001	0.563	0.055	-0.0002	0.064
	Watershed	0.37	<0.001	0.854	0.113	-0.0002	0.148
ses. β .MPD.old ($R^2=0.31$; $P<0.001$)	Local	0.27	<0.001	0.537	0.074	0.0096	0.088
	Watershed	0.47	<0.001	0.870	0.190	0.0096	0.232
ses. β .MNTD.all ($R^2=0.09$; $P<0.001$)	Local	0.20	<0.001	0.639	0.039	-0.0016	0.038
	Watershed	0.24	<0.001	0.762	0.055	-0.0016	0.054
ses. β .MNTD.ref ($R^2=0.32$; $P<0.001$)	Local	0.37	<0.001	0.609	0.137	-	0.117
ses. β .MNTD.new ($R^2=0.11$; $P<0.001$)	Local	0.14	<0.01	0.781	0.014	0.0109	0.067
	Watershed	0.19	<0.001	0.858	0.029	0.0109	0.080
ses. β .MNTD.old ($R^2=0.26$; $P<0.001$)	Local	0.28	<0.001	0.725	0.074	0.0580	0.137
	Watershed	0.38	<0.001	0.832	0.123	0.0580	0.180



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