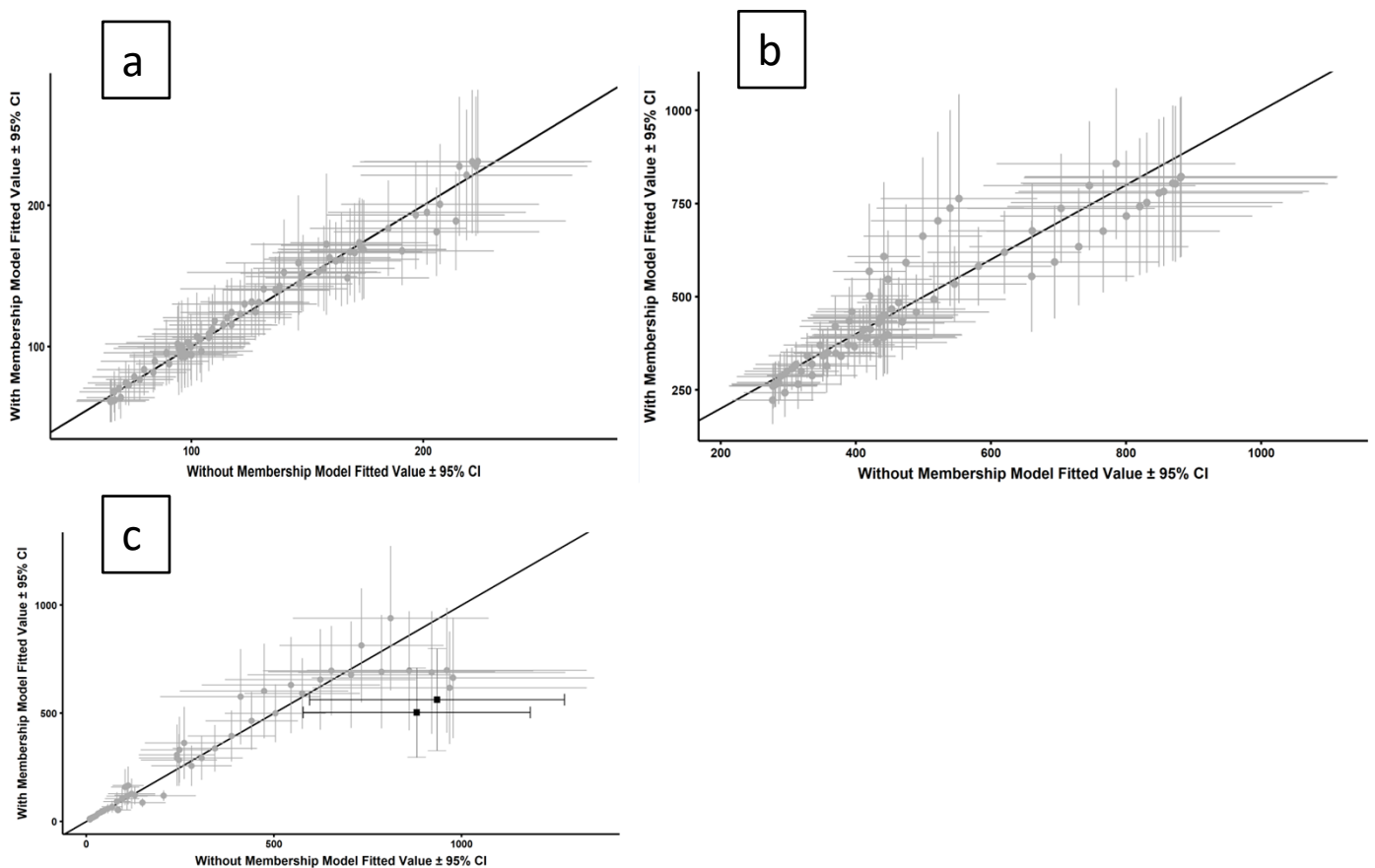


Online Resource Figure S1

The effect of the inclusion or exclusion of angling effort (number of members each year) on models predicting change in angling catches for salmonids from Loch Lomond over the time series. For salmon a) there was a negligible change to the total variation explained; R^2 decreased by 0.0008 with the inclusion of the number of members) and the 95% confidence interval (CI) of all values from the models overlapped with unity (bold solid line) b) for sea trout, the addition of angling effort explained 5% more variation (R^2 increased from 0.2615 to 0.3123) however all fitted values overlapped with unity c) for brown trout 16.2% more variation was explained when including a measure of effort (R^2 increased from 0.5209 to 0.6829) however only two of the 57 model estimates of catch did not overlap with unity. Thus, the inclusion of angling effort did not significantly alter the model estimates of catch.



Adams et al. A comparison of trends in population size and life history features of Atlantic salmon (*Salmo salar*) and anadromous and non-anadromous Brown trout (*Salmo trutta*) in a single catchment over 116 years

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Online Resource Table S1. The mean, standard deviation, minimum & maximum of each fish catch metric and the number of members of the angling club between 1903 and 2018. (Figures in parentheses indicate the years for which those data were recorded).

	Mean (N)	SD	Min (N)	Max (N)
Members 1903-2018	621.1	187.8	286	930
Salmon caught 1903-2018	131.4	94.1	38 (1905)	465 (1925)
Salmon per 100 members 1903-2018	23.0	16.6	5.6	92.5
Sea trout caught 1903-2018	482.8	291.1	52 (1994)	1464 (1912)
Sea trout per 100 members 1903-2018	96.7	94.1	6.8	492.9
Brown trout caught 1903-1994	283.5	332.9	1 (1955)	1169(1907)
Brown trout per 100 members	78.6	115.5	0.2	408.7

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Online Resources Table S2: The models best describing temporal population trends amongst Loch Lomond salmonid groups and comparisons with national and international data. Model coefficients estimates, standard error and z-values reported to 4 significant figures. Best model formulae are reported in R syntax.

(1) Salmon Catches				
Best model: Catch ~ Year + I(Year^2)				
Coefficient	Estimate	SE	z-value	p-value
Intercept	-3015.0	330.9	-9.112	<2e-16
Year	3.082	0.3329	9.257	<2e-16
I(Year^2)	-0.0007852	0.00008373	-9.378	<2e-16
(2a) Pre-fishery Abundance for Southern Europe				
Best model: PFA ~ Year + sin(2 * pi * (Year - 13)/13)				
Coefficient	Estimate	SE	z-value	p-value
Intercept	68.05	3.179	21.40	<2e-16
Year	-0.02695	0.001595	-16.90	<2e-16
sin(2 * pi * (Year - 13)/13)	-0.09154	0.03017	-3.034	0.0024
(2b) Pre-fishery Abundance for Scotland				
Best model: PFA ~ Year + sin(2 * pi * (Year - 19)/19)				
Coefficient	Estimate	SE	z-value	p-value
Intercept	58.38	3.550	16.45	<2e-16
Year	-0.02252	0.001780	-12.65	<2e-16
sin(2 * pi * (Year - 13)/13)	-0.1853	0.03385	-5.474	4.4e-08
(3) Salmon catches in Loch Lomond				
Best model: Catch ~ Year + I(Year^2) + sin(2 * pi * (Year - 32)/32)				
Coefficient	Estimate	SE	z-value	p-value
Intercept	-438.0	246.9	-1.774	0.0760
Year	0.4560	0.2521	1.809	0.0704
I(Year^2)	-0.0001174	0.00006433	-1.824	0.0682
sin(2 * pi * (Year - 32)/32)	0.3800	0.08907	4.266	1.99e-05

(4) Area differences in salmon catches				
Best model: Proportion ~ Area * Year + sin(2 * pi * (Year - 19)/19)				
Coefficient	Estimate	SE	t-value	p-value
Intercept	4.442	7.985	0.556	0.5791
Year	-0.004060	0.004000	-1.015	0.3122
AreaScotland	40.51	11.216	3.611	0.000456
AreaSEurope	48.35	11.257	4.295	3.71e-05
sin(2 * pi * (Year - 19)/19)	-0.1369	0.03917	-3.495	0.000679
AreaScotland:Year	-0.020303	0.005622	-3.611	0.000456
AreaSEurope:Year	-0.02424	0.005643	-4.295	3.17e-05
Contrast	Estimate	SE	z-ratio	p-value
Lomond – Scotland	0.02030	0.00562	3.611	0.0009
Lomond – SEurope	0.2424	0.00564	4.295	0.0001
Scotland – SEurope	0.00394	0.00570	0.691	0.7687
(5) Sea trout on the west of Scotland				
Best model: Catch ~ Year + sin(2 * pi * (Year - 18)/18)				
Coefficient	Estimate	SE	t-value	p-value
Intercept	45.58	2.525	18.05	<2e-16
Year	-0.01807	0.001272	-14.203	<2e-16
sin(2 * pi * (Year - 18)/18)	0.1186	0.03567	3.325	0.000883
(6) Sea trout catches in Loch Lomond				
Best model: Catch ~ Year + sin(2 * pi * (Year - 32)/32)				
Coefficient	Estimate	SE	z-value	p-value
Intercept	20.00	3.095	6.463	1.02e-10
Year	-0.007071	0.001575	-4.489	7.15e-06
sin(2 * pi * (Year - 32)/32)	-0.2939	0.09002	-3.264	0.0011
(7) Sea Trout cf Lomond and Scotland				
Best model: Proportion ~ Year + sin(2 * pi * (Year - 32)/32)				
Coefficient	Estimate	SE	z-value	p-value
Intercept	28.98	5.377	5.390	5.12e-07
Year	-0.01651	0.002705	-6.103	2.25e-08
sin(2 * pi * (Year - 32)/32)	-0.2130	0.07346	-2.900	0.00464

(8) Brown Trout in Loch Lomond				
Best model: Catch ~ Year + I(Year^2) + sin(2 * pi * (Year - 32)/32)				
Coefficient	Estimate	SE	z-value	p-value
Intercept	-2016	627.8	-3.212	0.001320
Year	2.112	0.06437	3.280	0.001037
I(Year)^2	-0.005512	0.0001650	-3.341	0.000834
sin(2 * pi * (Year - 32)/32)	-0.6582	0.1590	-4.139	3.48e-05
(9) Salmonid population change in Loch Lomond				
Best model: Proportion ~ Year * Species + I(Year^2) + sin(2 * pi * (Year - 32)/32) + sin(2 * pi * (Year - 60)/60)				
Coefficient	Estimate	SE	z-value	p-value
Intercept	-417.4	187.4	-2.227	0.0270
Year	0.4605	0.1927	2.390	0.0178
Fish grp Salmon	-73.28	8.220	-8.195	2.92e-16
Fish grp Sea trt	-67.69	8.161	-8.294	1.53e-14
I(Year^2)	-0.0001276	0.00004952	-2.577	0.0107
sin(2 * pi * (Year - 32)/32)	0.1281	0.07109	1.802	0.0731
sin(2 * pi * (Year - 60)/60)	-0.3860	0.07413	-5.206	4.73e-07
Year: Fish grp Salmon	0.03785	0.004265	8.874	3.79e-16
Year: Fish grp Sea trt	0.03499	0.004236	8.260	1.90e-14
Contrasts	Estimate	SE	z-ratio	p-value
Brown trt - Salmon	-0.03785	0.00426	-8.874	<0.0001
Brown trt - Sea trt	-0.03499	0.00424	-8.260	<0.0001
Salmon - Sea trt	0.00286	0.00247	1.156	0.4797
(10) Mass change in sea trout				
Best model: z_score ~ Year * Species				
Coefficient	Estimate	SE	t-value	p-value
Intercept	-58.04	24.35	-2.384	0.01868
Year	0.02932	0.01230	2.384	0.01868
Fish Grp Salmon	115.2	28.74	4.006	0.000107
Fish Grp Sea trt	76.93	28.74	2.677	0.008477
Year:Fish Grp Salmon	-0.05801	0.01449	-4.002	0.000109
Year:Fish Grp Sea trt	-0.03880	0.01449	-2.677	0.008463
Contrast	Estimate	SE	t-ratio	p-value
Brown trt - Salmon	0.0580	0.0145	4.002	0.0003
Brown trt - Sea trt	0.0388	0.0145	2.677	0.0229
Salmon - Sea trt	-0.0192	0.0109	-1.769	0.1844

(11) Proportion of trout that were sea trout				
Best model: Proportion ~ Year				
Coefficient	Estimate	SE	t-value	p-value
Intercept	-59.84	5.209	-11.49	3.08e-16
Year	0.03138	0.002696	11.64	<2e-16
(12) Seasonality				
Best model: MonthlyProportion ~ Year * Season + I(Year^2) + (sin(2 * pi * (Year - 32)/32))				
Coefficient	Estimate	SE	t-value	p-value
Intercept	-13.54	9.943	-1.362	0.1741
Year	0.005670	0.004981	1.138	0.2558
SeasonEarlySummer	14.55	12.74	1.142	0.2540
SeasonLateSummer	7.181	12.08	0.595	0.5525
SeasonSpring	67.93	19.53	3.478	0.000568
Year:SeasonEarlySummer	-0.007046	0.006384	-1.104	0.2705
Year:SeasonLaterSummer	-0.003087	0.006052	-0.510	0.6103
Year:SeasonSpring	-0.03509	0.009822	-3.573	0.000402
Contrasts	Estimate	SE	z-ratio	p-value
Autumn – Early Summer	0.00705	0.00638	1.104	0.6872
Autumn – Late Summer	0.00309	0.00605	0.510	0.9567
Autumn – Spring	0.03509	0.00982	3.573	0.0020
Early Summer – Late Summer	-0.00396	0.00527	-0.752	0.8760
Early Summer – Spring	0.02804	0.00936	2.997	0.0145
Late Summer – Spring	0.03200	0.00914	3.503	0.0026

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Online Resource Table S3. The mean, standard deviation, minimum & maximum of fish mass between 1952 and 2017. (Figures in parentheses indicate the years that data were recorded)

	Mean	SD	Min	Max
Salmon mass 1952-2017	3.48	0.51	2.77 (2007)	4.80 (1955)
Sea trout mass 1952-2017	0.89	0.13	0.57(2000)	1.10 (2017)
Brown trout mass 1952-1998	0.50	0.22	0.16 (1962&63)	1.16 (1998)